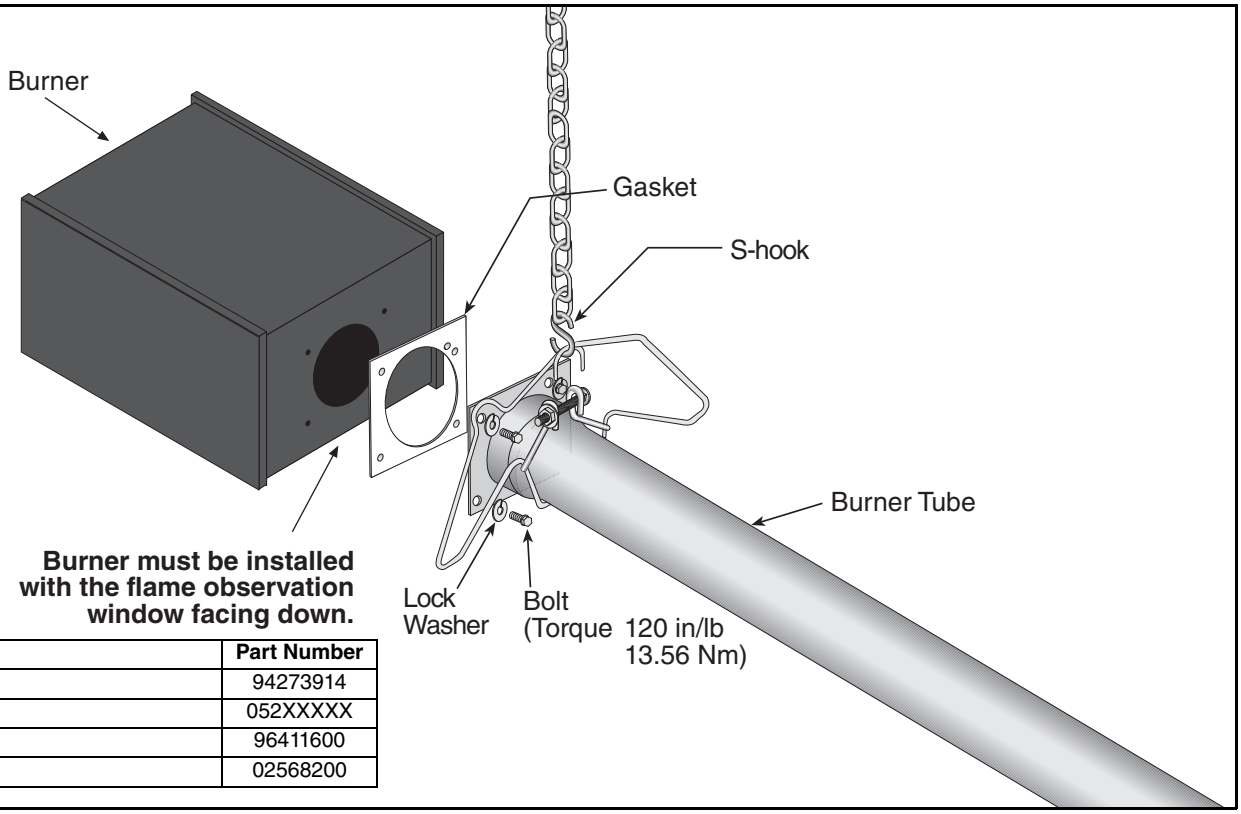
Step 9.12 Burner Installation

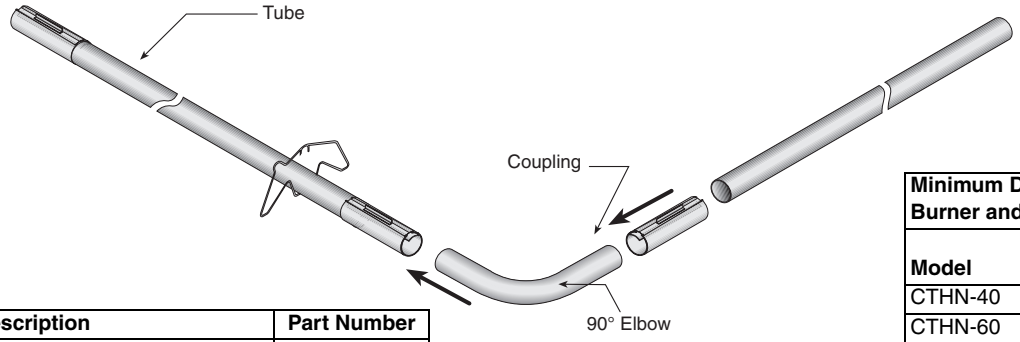


Description	Part Number
Bolt	94273914
Burner	052XXXXX
Lock Washer	96411600
Gasket	02568200

SECTION 10: OPTIONAL HEATER ACCESSORIES

10.1 Elbow Package Configuration

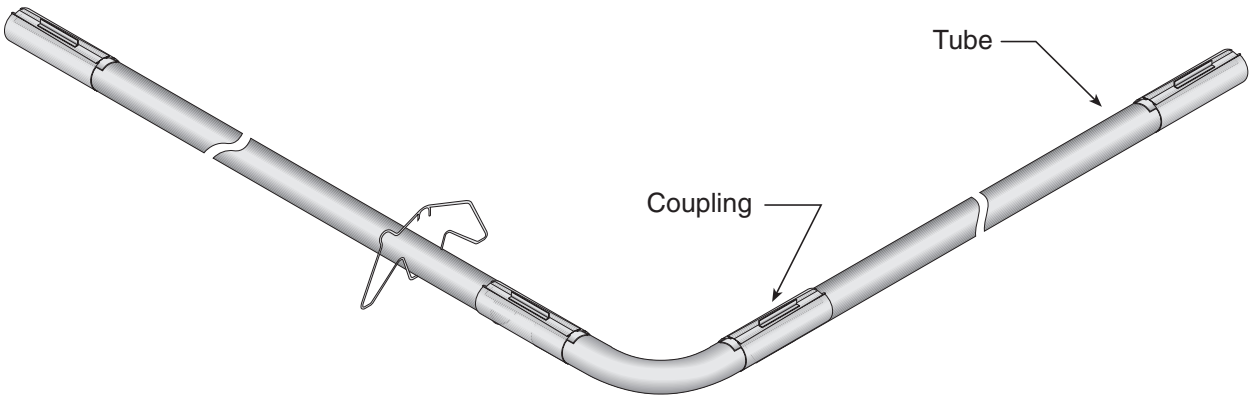
Step 10.1.1 Elbow Installation



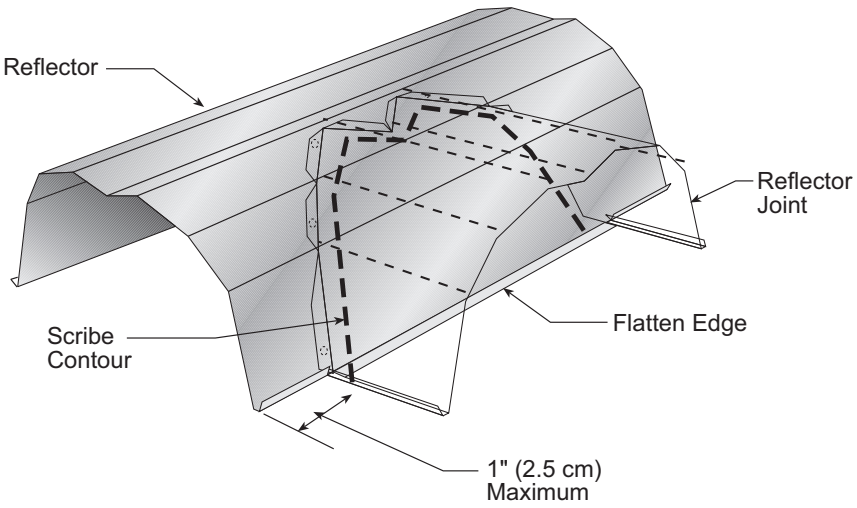
Description	Part Number
Elbow Package	**02718702**
90° Elbow	01335801
Coupling	01312700
Reflector End Cap	02750800
Reflector Joint Piece	02750900
U-Clip Package	91107720

Minimum Distance Required Between Burner and Elbow	
Model	**Minimum Distance**
CTHN-40	10' (3 m)
CTHN-60	10' (3 m)
CTHN-80	10' (3 m)
CTHN-100	15' (4.5 m)
CTHN-125	15' (4.5 m)
CTHN-150	20' (6 m)
CTHN-175	20' (6 m)
CTHN-200	20' (6 m)

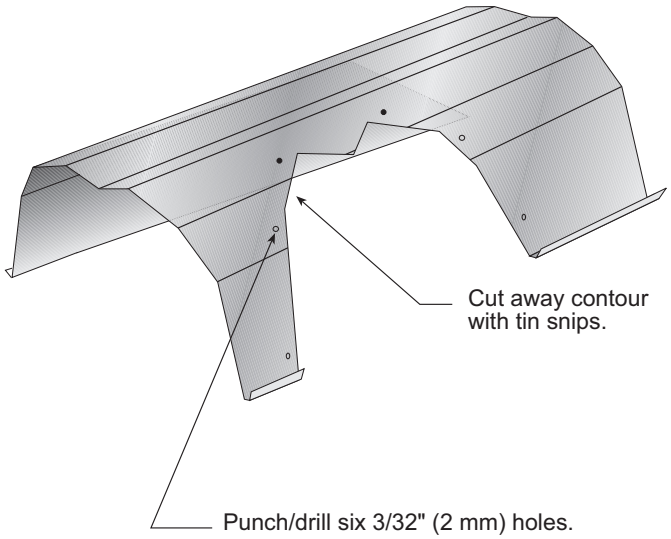
Step 10.1.2 Elbow Installation



Step 10.1.3 Reflector Joint Installation



Step 10.1.4 Reflector Joint Installation



Step 10.1.5 Reflector Joint Detail

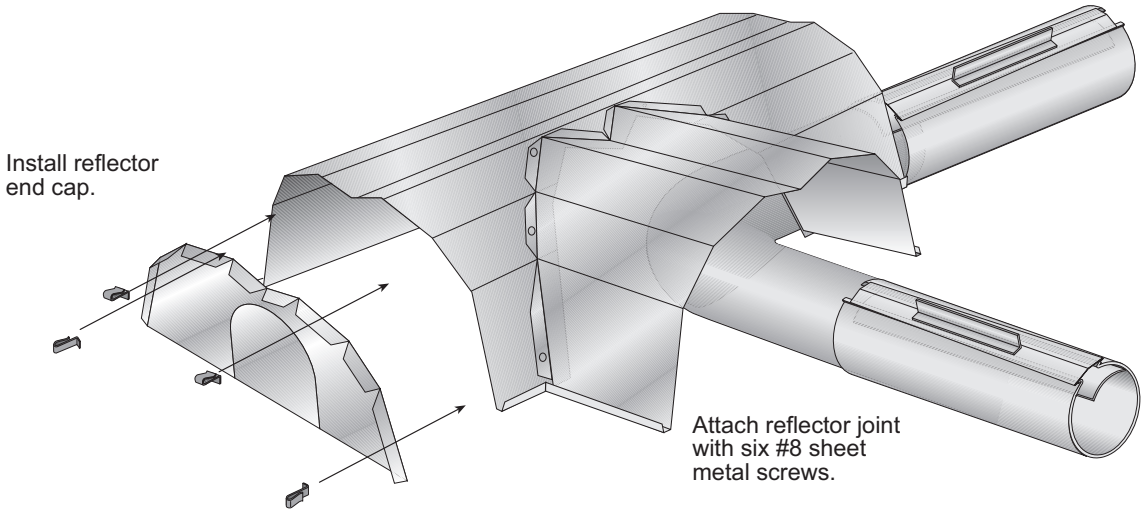
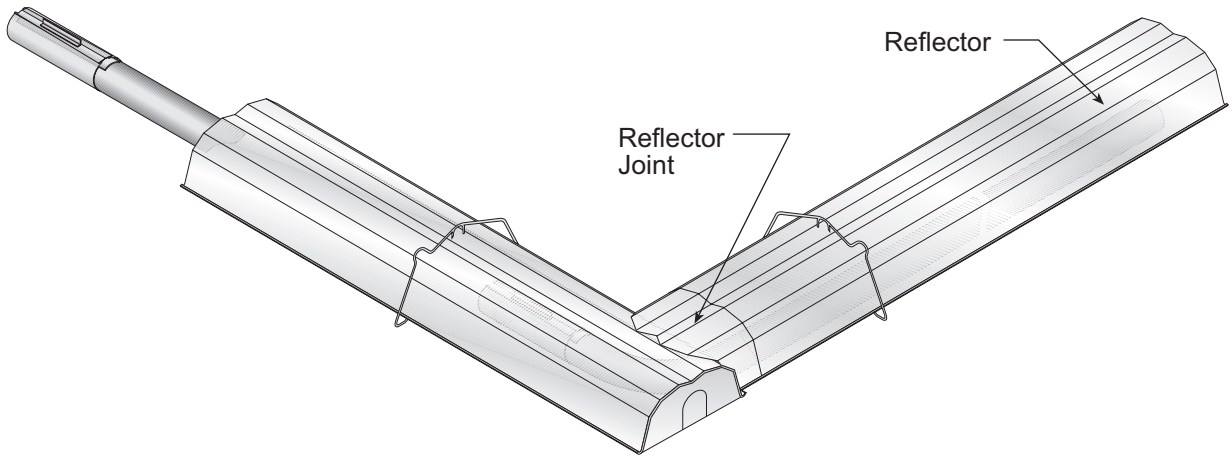
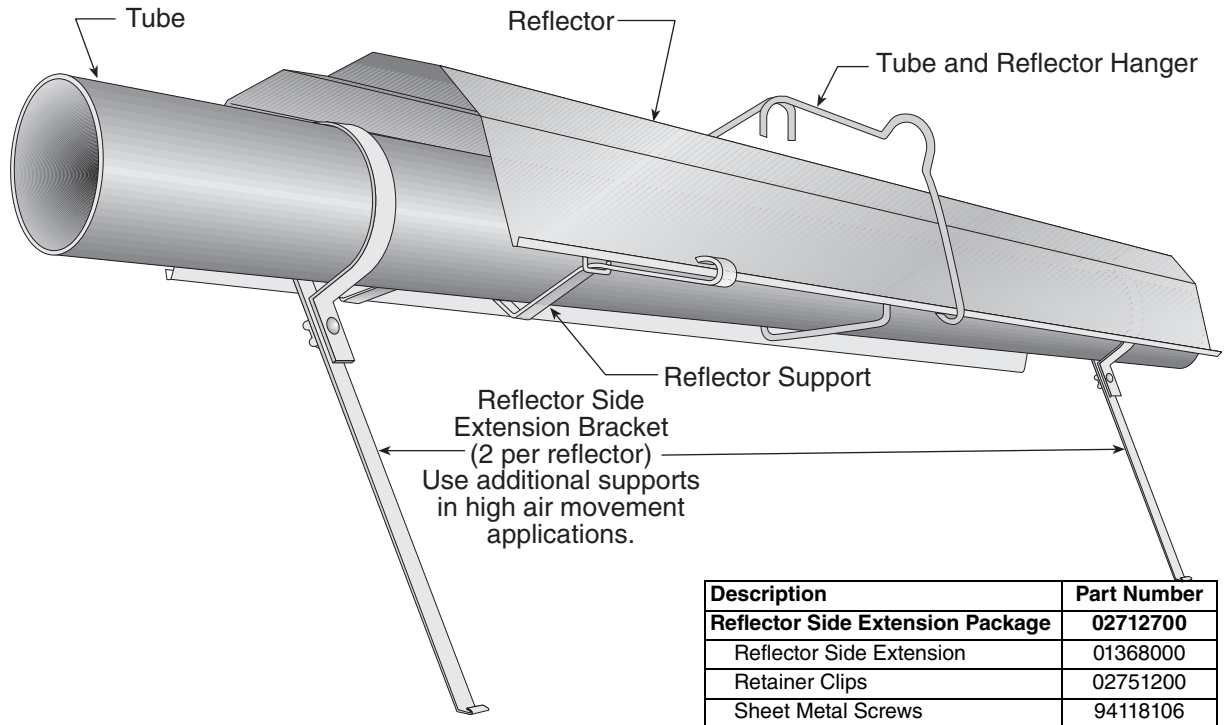


FIGURE 24: Reflector Joint Detail



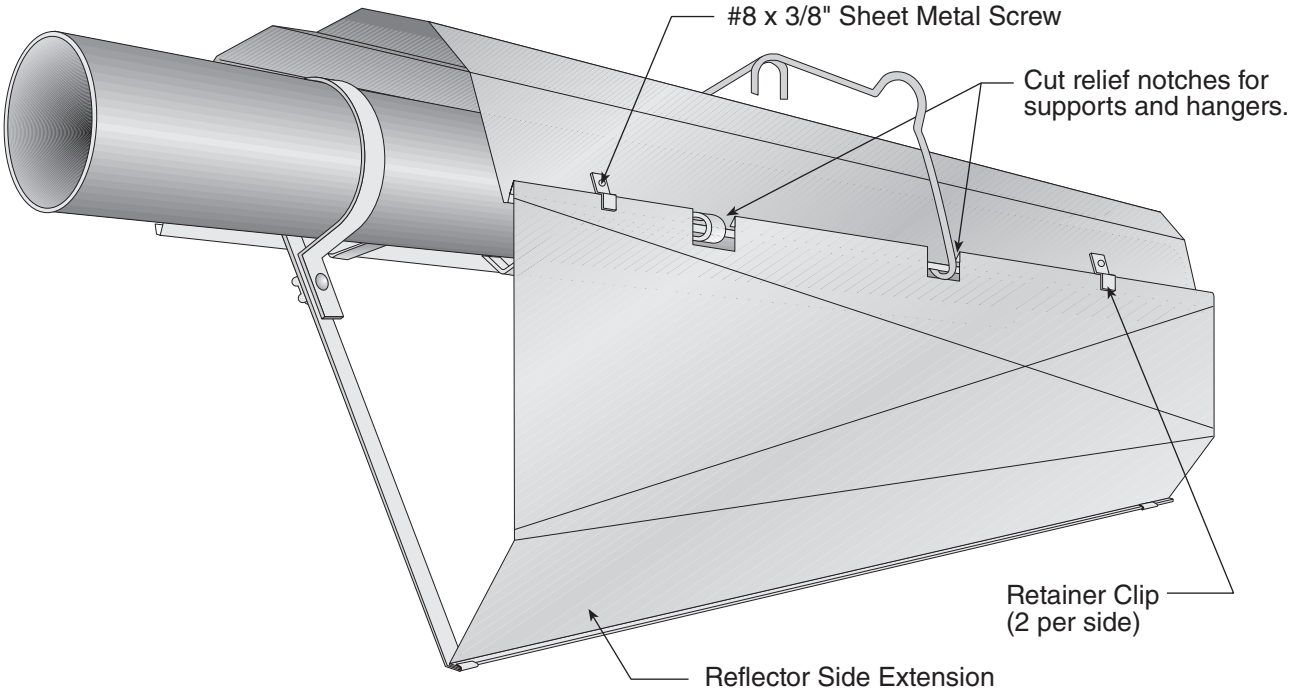
10.2 Reflector Side Extension

Step 10.2.1 Bracket Installation



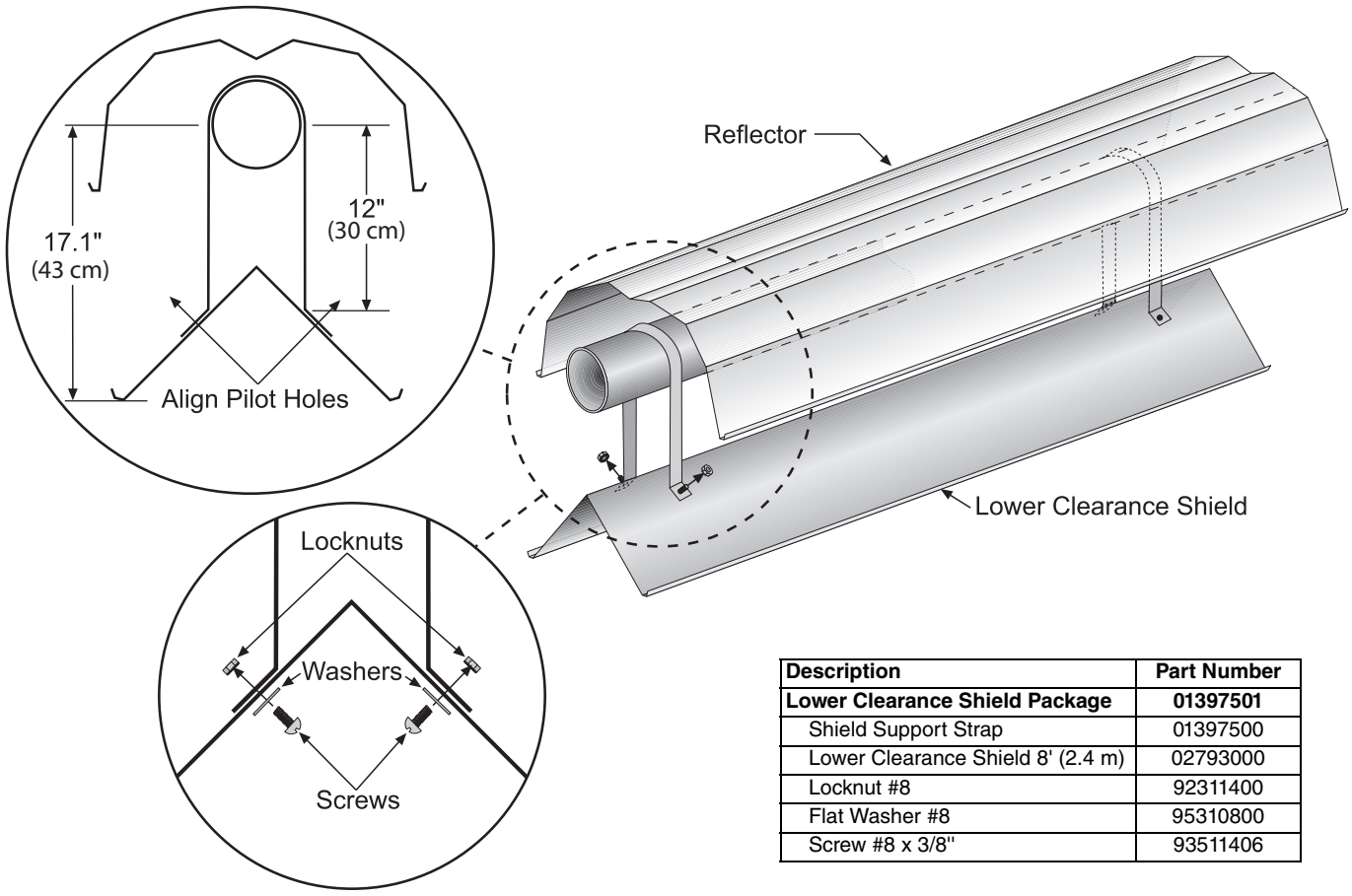
Description	Part Number
Reflector Side Extension Package	**02712700**
Reflector Side Extension	01368000
Retainer Clips	02751200
Sheet Metal Screws	94118106
Order Separately	
Reflector Side Extension Bracket	01329910

Step 10.2.2 Side Reflector Installation



10.3 Lower Clearance Shield Installation

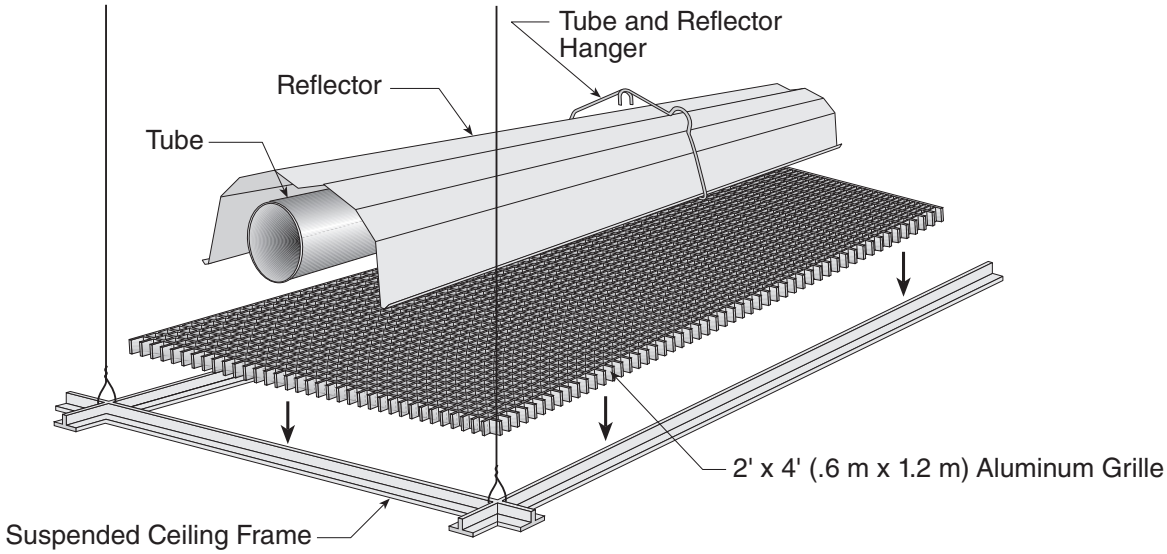
Step 10.3.1 Shield Support Strap Assembly



Description	Part Number
Lower Clearance Shield Package	**01397501**
Shield Support Strap	01397500
Lower Clearance Shield 8' (2.4 m)	02793000
Locknut #8	92311400
Flat Washer #8	95310800
Screw #8 x 3/8"	93511406

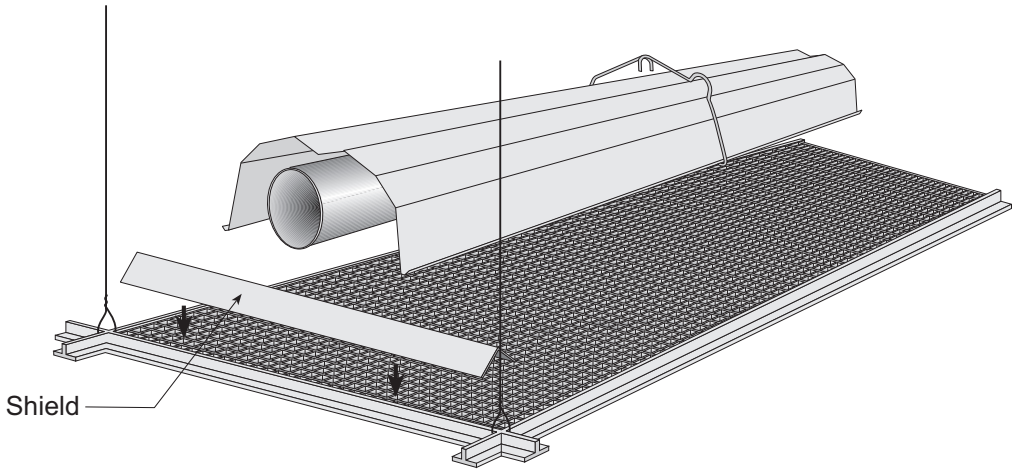
10.4 Two-Foot Decorative Grille Installation

Step 10.4.1 Grille Installation



Description	Part Number
Aluminum Grille 2' x 4' (.6 m x 1.2 m)	91407000

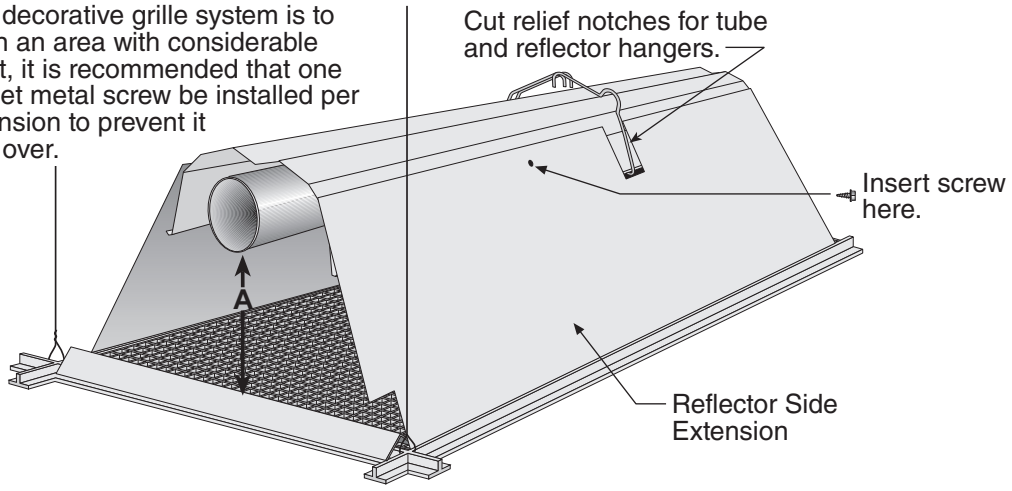
Step 10.4.2 Frame Shield Installation



Description	Part Number
Deco Grille Shield	01365900

Step 10.4.3 Reflector Side Extension Installation for Decorative Grilles

NOTE: If the decorative grille system is to be installed in an area with considerable air movement, it is recommended that one #8 x 3/8" sheet metal screw be installed per reflector extension to prevent it from blowing over.

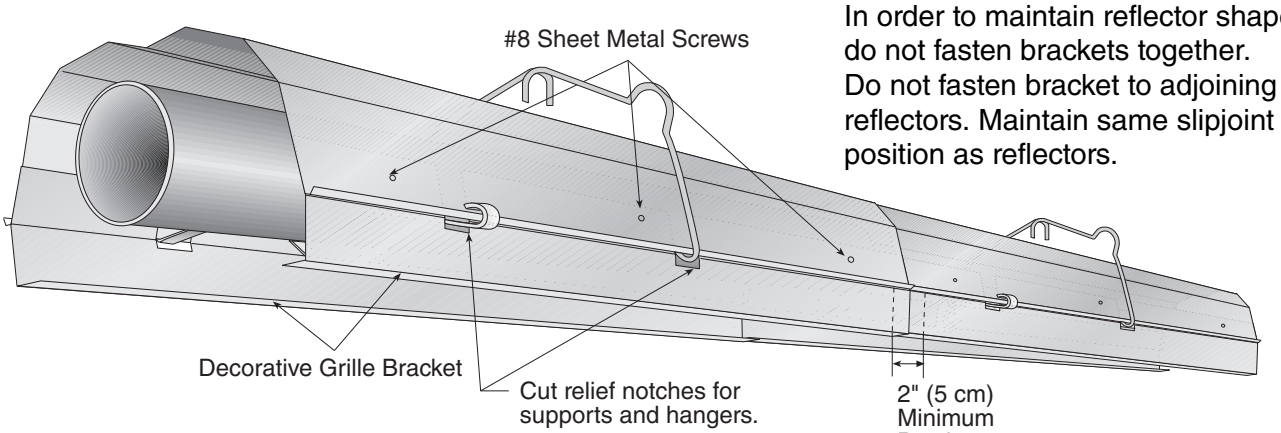


Distance "A"		Extension	
Minimum	Maximum	Part No.	Width
2" (4 cm)	6" (15 cm)	01370408	8" (20 cm)
6" (15 cm)	10" (26 cm)	01370412	12" (30 cm)
10" (26 cm)	14" (37 cm)	01370416	16" (40 cm)

Description	Part Number
Reflector Side Extension	01370412

10.5 One-Foot Decorative Grille Installation

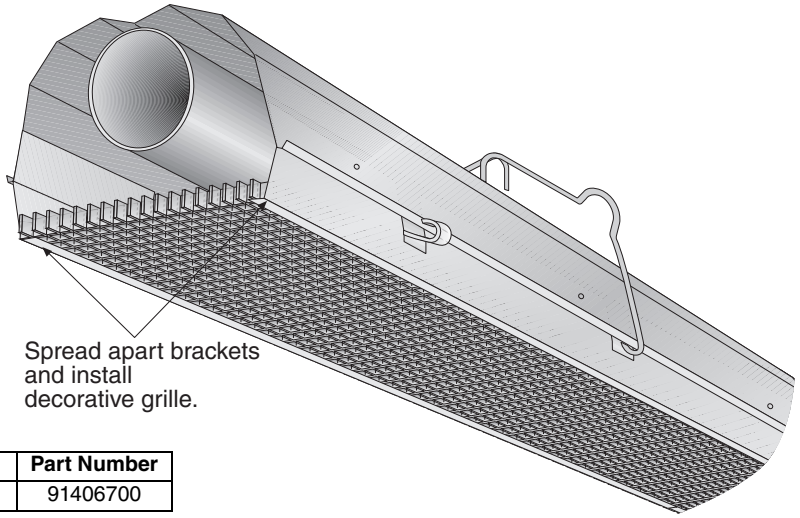
Step 10.5.1 One-Foot Decorative Grille Bracket


#8 Sheet Metal Screws
Decorative Grille Bracket
Cut relief notches for supports and hangers.
2" (5 cm) Minimum Bracket Overlap

In order to maintain reflector shape, do not fasten brackets together. Do not fasten bracket to adjoining reflectors. Maintain same slipjoint position as reflectors.

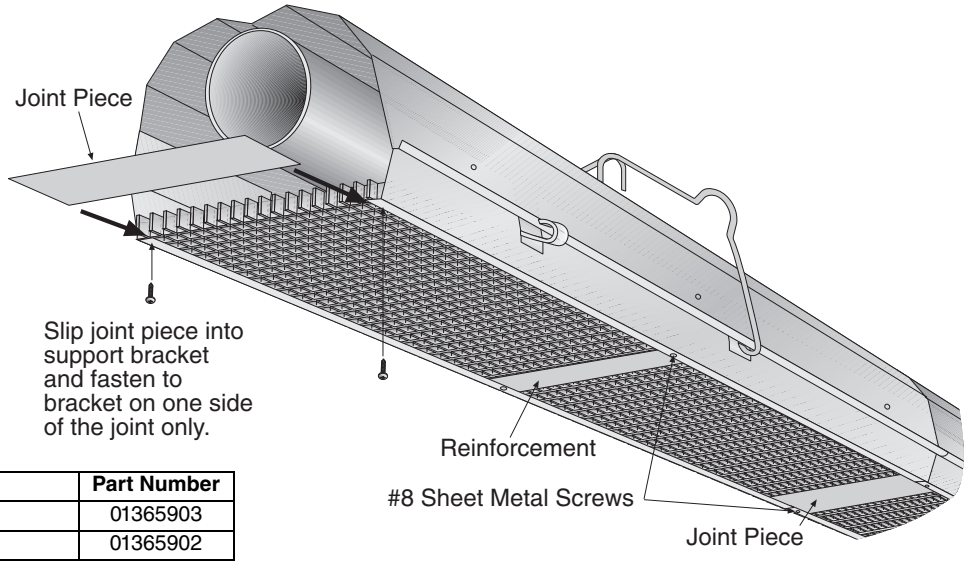
Description	Part Number
Bracket	01363003

Step 10.5.2 Decorative Grille



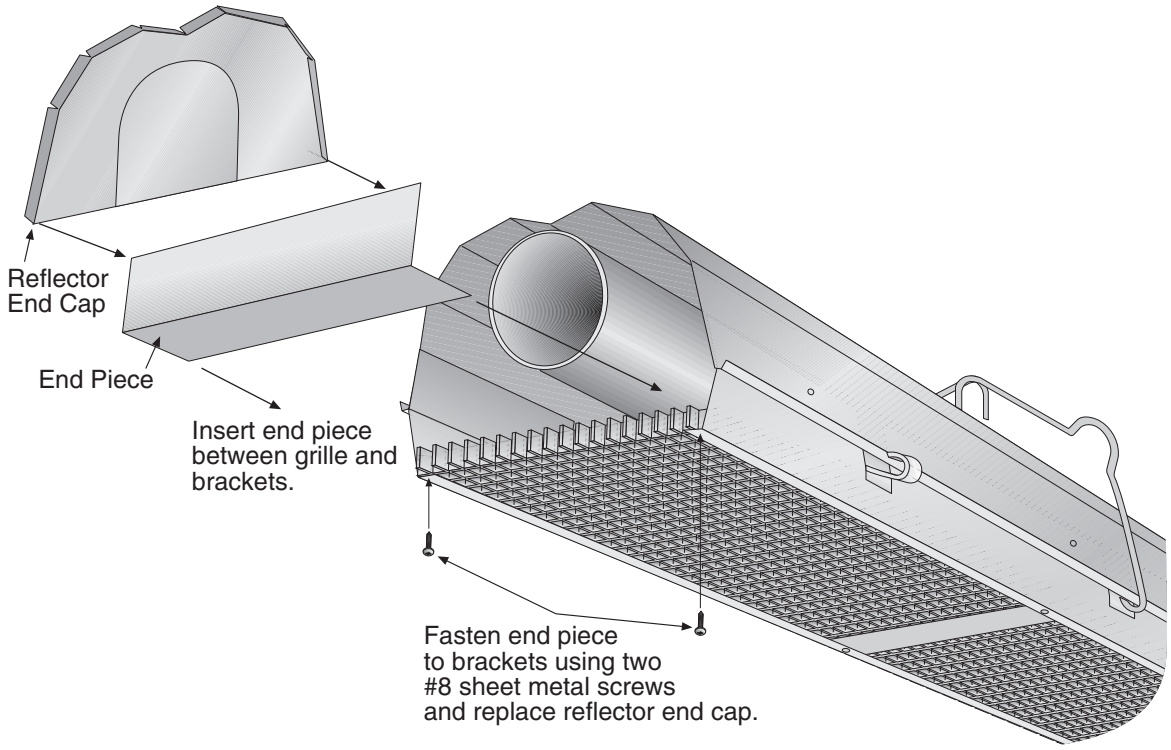
Description	Part Number
Decorative Grille 1' x 8' (.3 m x 2.4 m)	91406700

Step 10.5.3 Joint Piece and Reinforcement


Joint Piece
Slip joint piece into support bracket and fasten to bracket on one side of the joint only.
Reinforcement
#8 Sheet Metal Screws
Joint Piece

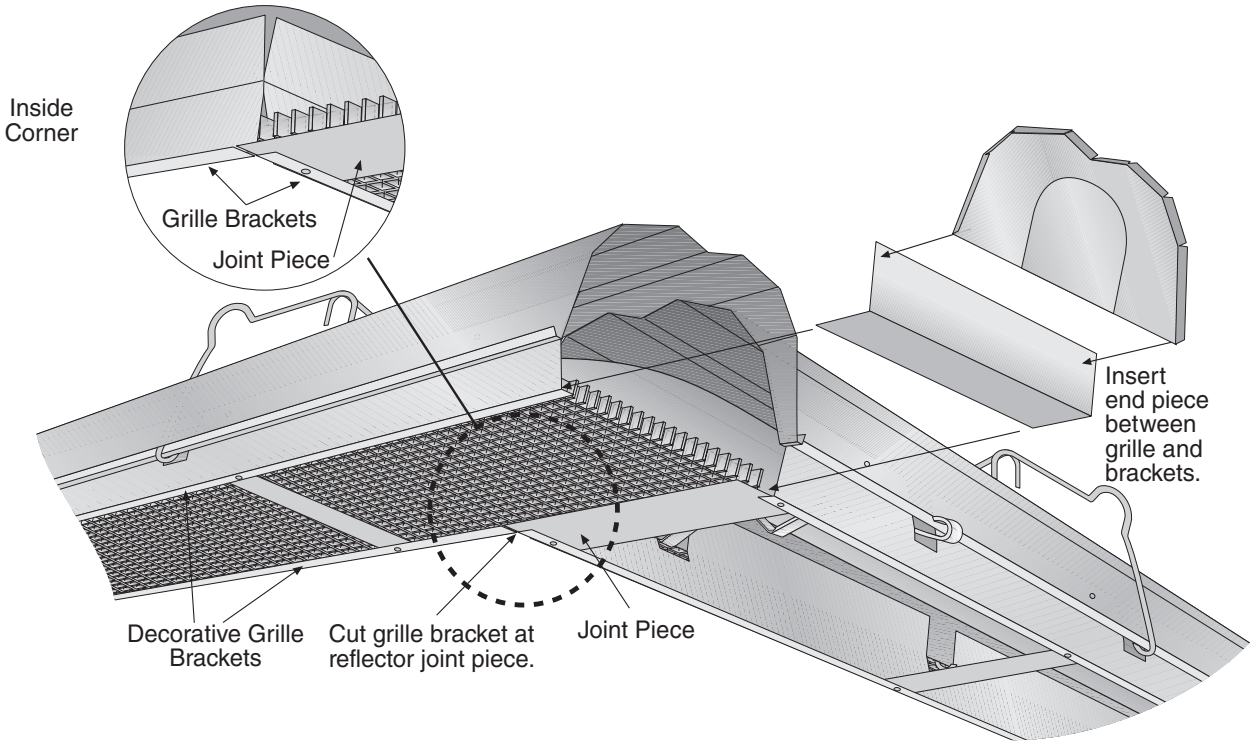
Description	Part Number
Joint Piece	01365903
Reinforcement	01365902

Step 10.5.4 End Piece and Reflector End Cap



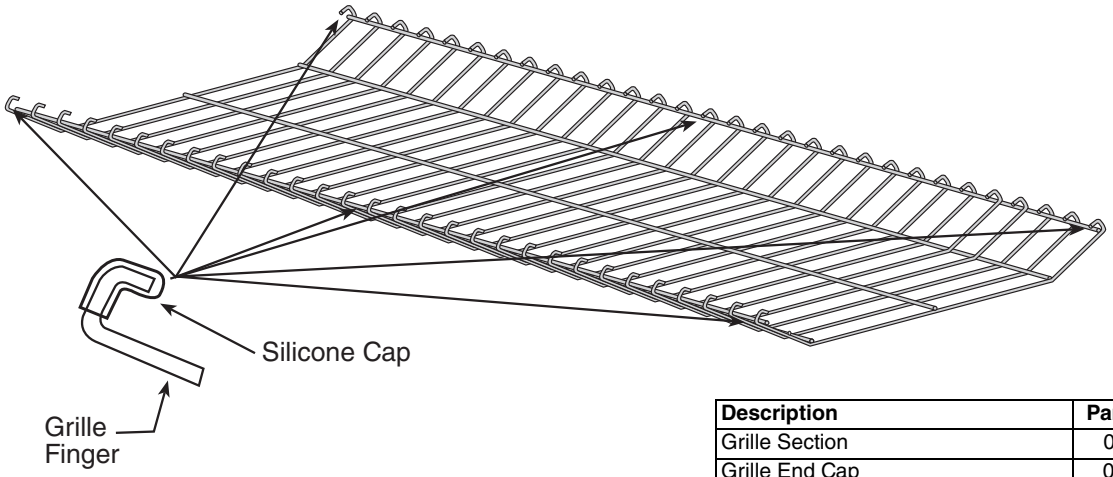
Description	Part Number
End Piece	01365901

Step 10.5.5 90° Elbow



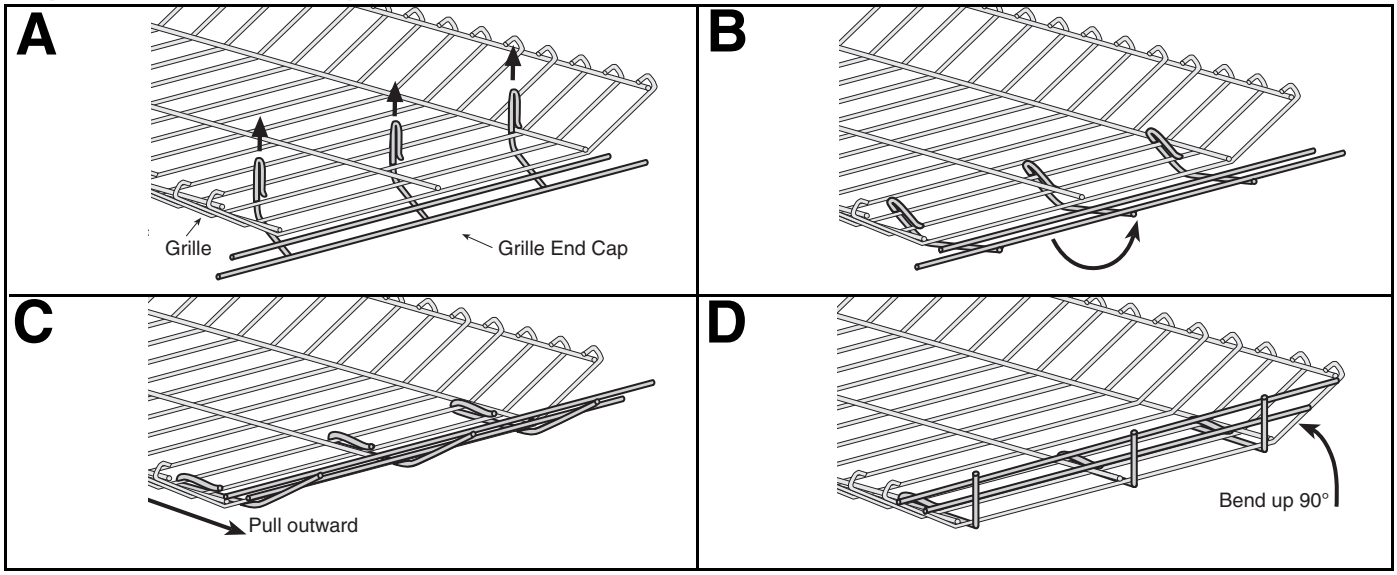
10.6 Protective Grille Installation

Step 10.6.1 Silicone Cap Installation

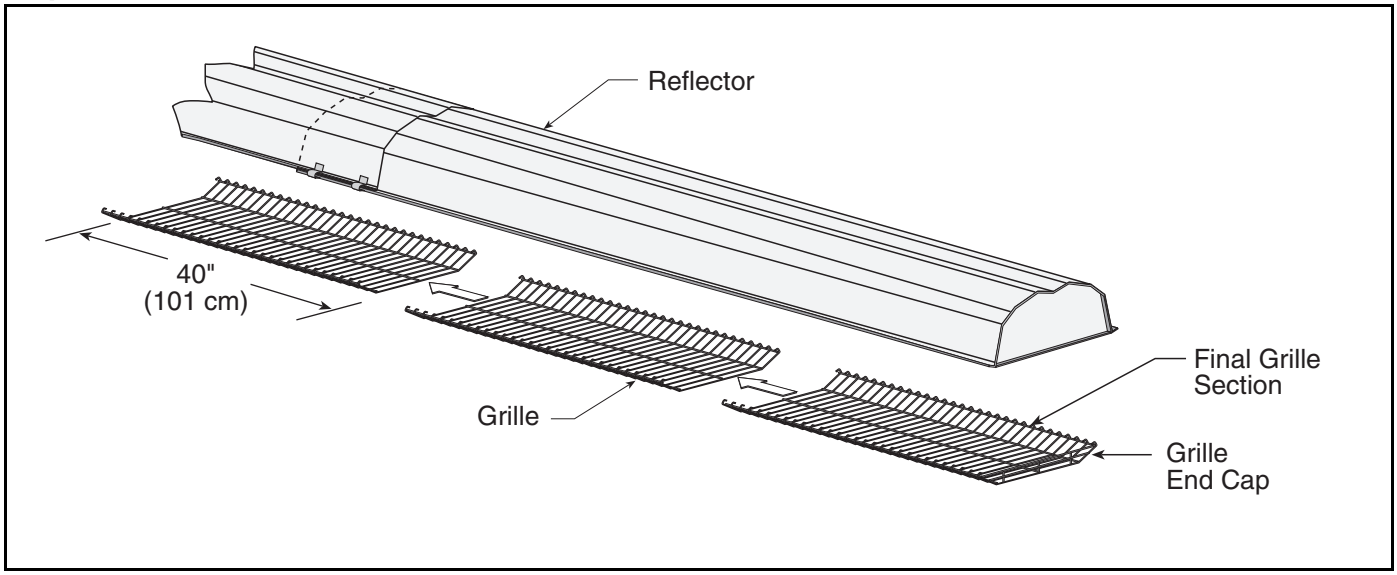


Description	Part Number
Grille Section	08050001
Grille End Cap	08050002
Silicone Cap	91915951-6P

Step 10.6.2 Grille End Cap Installation



Step 10.6.3 Grille Installation



SECTION 11: VENTING - GENERAL

⚠ WARNING

Carbon Monoxide Hazard

Multiburner systems are not approved for unvented use and must be vented outdoors.

Unitary heaters installed unvented must be interlocked with sufficient building exhaust.

Heaters must be installed according to the installation manual.

Failure to follow these instructions can result in death or injury.

11.1 General Venting Requirements

This heater must be vented in accordance with the rules contained in this manual and with the following national codes and any state, provincial or local codes which may apply: **United States:** Refer to ANSI Z223.1 (NFPA 54) - latest revision; **Canada:** Refer to CAN/CGA-B149.1 and B149.2 - latest revision.

In brooder installations, affix brooder ventilation wall tag (P/N 91039300) adjacent to the heater thermostat. In the absence of a thermostat, the wall tag must be posted in a conspicuous location.

Any portion of vent pipe passing through a combustible wall must have an approved thimble to conform with the above listed codes.

Vent pipe must be sloped downward away from the burner 1/2" (1 cm) for every 20' (6 m).

The bottom of the vent or air intake terminal shall not be located less than 1' (.3 m) above grade level.

The vent shall not terminate less than 7' (2.1 m) above grade where located adjacent to public walkways.

Vent terminal must be installed at a height sufficient to prevent blockage by snow and building materials protected from degradation by flue gases.

Secure all joints with #8 x 3/8 sheet metal screws. Seal all joints with high temperature silicone sealant.

Vent terminal must be beyond any combustible overhang.

For vertical venting, vent shall not extend less than 2' (.6 m) above the highest point where it passes through a flat roof of a building.

11.1.1 United States Requirements

Vent must terminate at least 3' (.9 m) above any forced air inlet located within 10' (3.1 m).

Vent must terminate at least 4' (1.2 m) below, 4' (1.2 m) horizontally from, or 1' (.3 m) above any door, operable window, or gravity air inlet into any building.

11.1.2 Canadian Requirements

The vent shall not terminate within 6' (1.8 m) of a mechanical air supply inlet to any building.

The vent shall not terminate within 3' (.9 m) of a window or door that can be opened in any building, any non-mechanical air supply inlet to any building, or of the combustion air inlet of any other appliance.

SECTION 12: VENTING - UNITARY HEATER

All general venting requirements apply.
See Page 50, Section 11.
Exhaust end of fan will accept a 4" (10 cm) vent pipe. To prevent leakage of condensation, seal all the vent joints using a high temperature silicone sealant.

The heater may be individually vented or common vented. When venting horizontally, a maximum of two heaters can be commonly vented. *See Page 53, Section 12.9*. When venting vertically, a maximum of four heaters can be commonly vented. *See Page 54, Section 12.10*.

The CTHN unitary heater may also be installed unvented in certain circumstances according to building ventilation codes. Refer to the codes on *Page 50, Section 11.1* and *Section 12.1* for further information. Unvented operation also requires compliance with the clearances to combustibles given *on Page 6, Figure 10*.

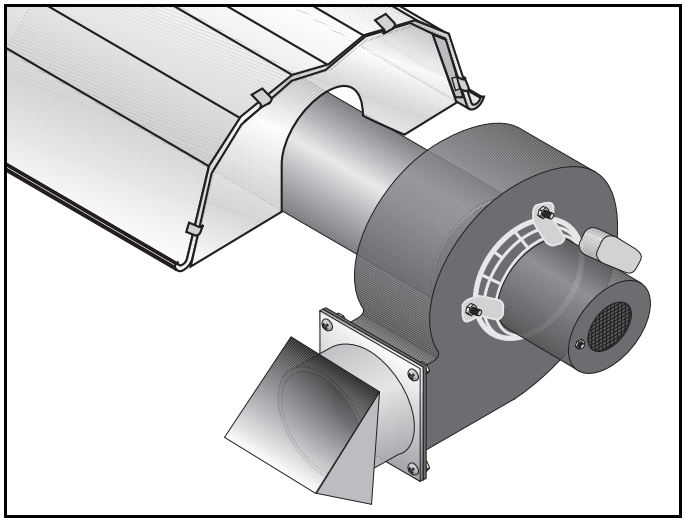
12.1 Unvented Operation

Sufficient ventilation must be provided in the amount of 4 cfm per 1000 Btu/h firing rate (United States); 3 cfm per 1000 Btu/h firing rate (Canada).

12.2 Unvented Operation Termination

For unvented operation, turndown type vent terminal with a screen must be installed at the exhaust end of the fan. Vent terminal design shall not incorporate backdraft flap.

FIGURE 25: Fan Termination



12.3 Horizontal Venting

In noncombustible walls only, vent terminal (P/N 02537801-1P) may be used.

For 4" (10 cm) vents in either combustible or noncombustible walls, use Tjernlund VH1-4 (P/N 90502100) or equivalent, insulated vent terminal. Follow the manufacturer's instructions for proper installation.

For 6" (15 cm) common vents in either combustible or noncombustible walls, use Tjernlund VH1-6 (P/N 90502101) or equivalent, insulated vent terminal. Follow the manufacturer's instructions for proper installation.

12.4 Vertical Venting

For 4" (10 cm), an approved vent cap (P/N 90502300) must be used.

For 6" (15 cm) common vent, an approved vent cap (P/N 90502302) must be used.

For common vertical venting of more than two heaters, *See Page 54, Section 12.10*.

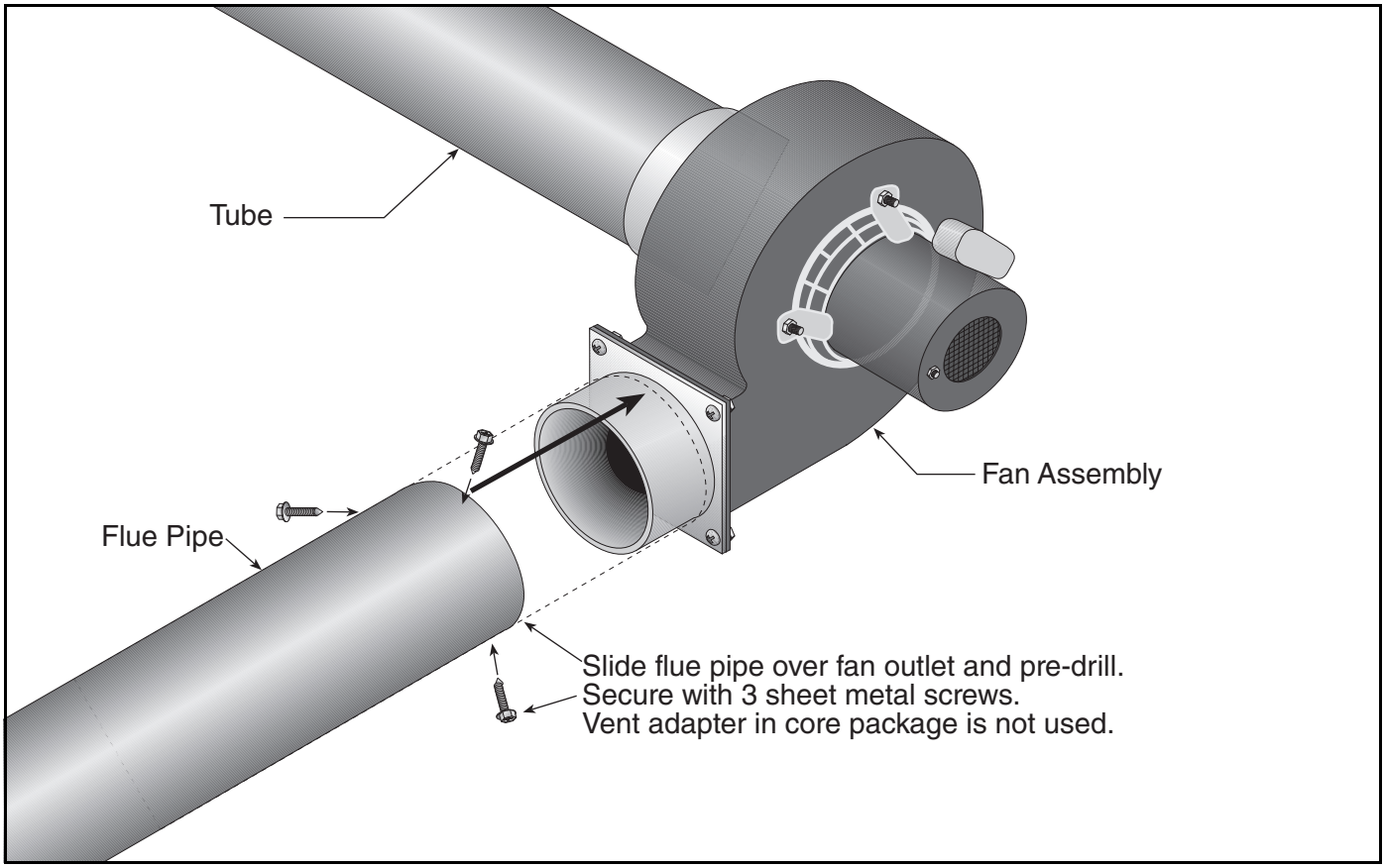
12.5 Length Requirements

The maximum vent length allowed is 45' (13.7 m). The maximum outside air supply duct length allowed is 45' (13.7 m).

The total vent length, plus outside air duct length and any extensions to minimum heat exchanger lengths, cannot exceed 65' (19.8 m).

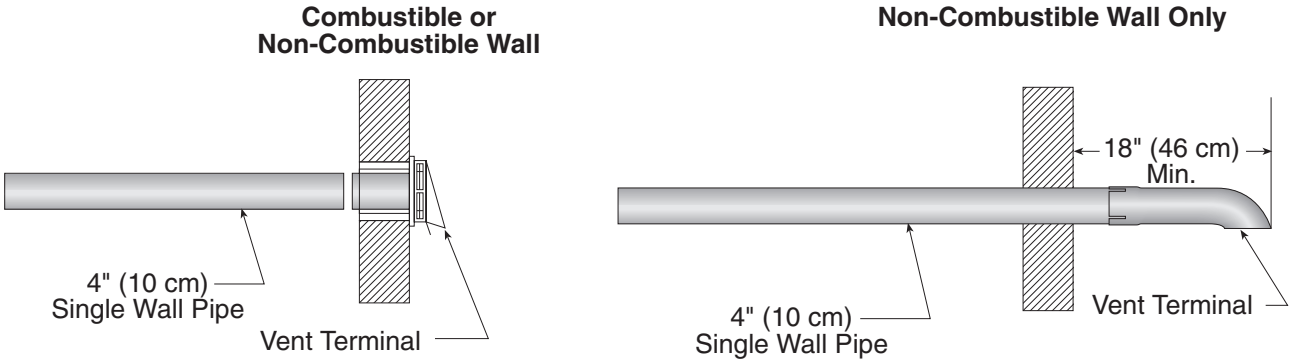
Vent length should be limited to less than 20' (6 m). If using extended heater lengths or vent lengths greater than 20' (6 m), condensation will form in the vent pipe. Insulation and additional sealing measures (high temperature silicone at all seams) are required. Optional heat exchanger beyond minimum lengths is considered as vent length for length determination. Subtract 15' (4.6 m) of maximum allowed vent or duct length per vent elbow if more than two are used.

12.6 Flue Connection Detail


Tube
Fan Assembly
Flue Pipe
Slide flue pipe over fan outlet and pre-drill.
Secure with 3 sheet metal screws.
Vent adapter in core package is not used.

12.7 Horizontal Ventilation 4" (10 cm) Pipe

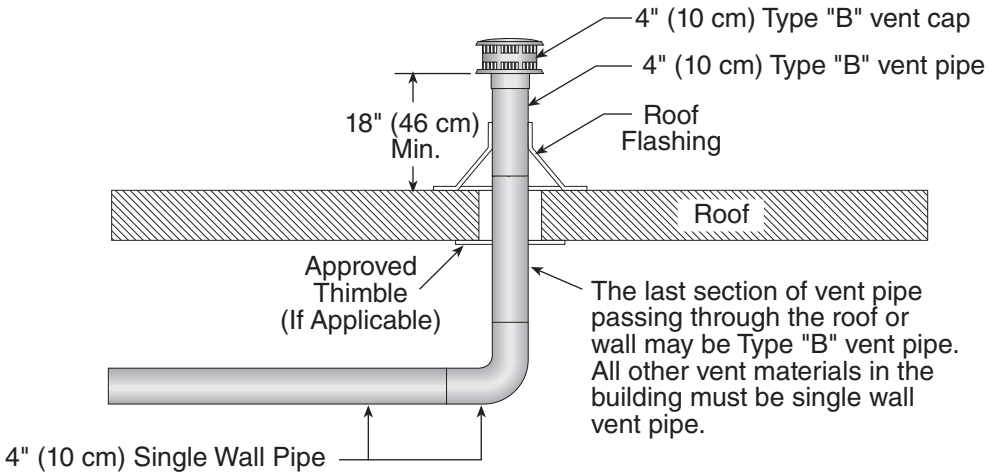
SIDE VIEW



Description	Part Number
Vent Terminal (Comb. Wall)	90502100
Vent Terminal	02537801-XX
Wall Thimble	90505600

12.8 Vertical Ventilation 4" (10 cm) Pipe

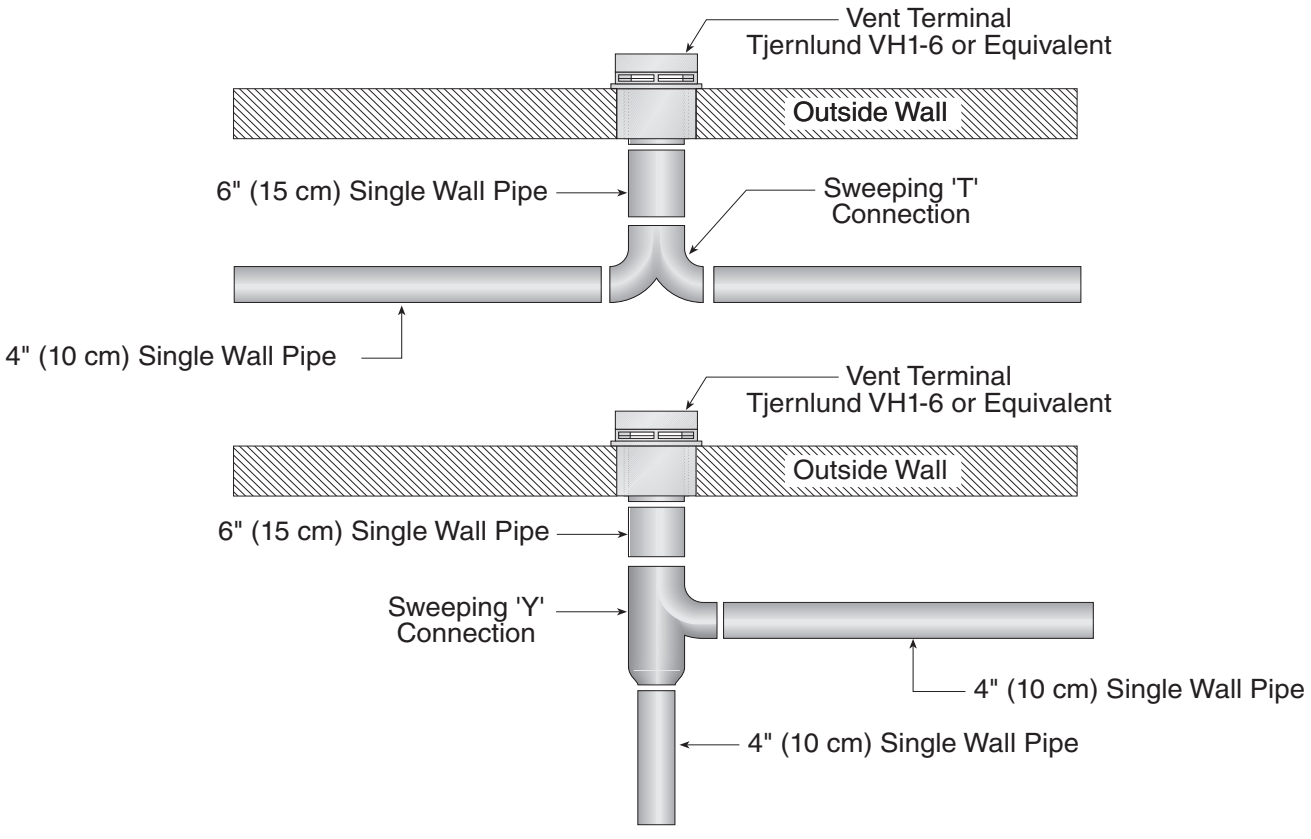
SIDE VIEW


4" (10 cm) Type "B" vent cap
4" (10 cm) Type "B" vent pipe
18" (46 cm) Min.
Roof Flashing
Roof
Approved Thimble (If Applicable)
The last section of vent pipe passing through the roof or wall may be Type "B" vent pipe. All other vent materials in the building must be single wall vent pipe.
4" (10 cm) Single Wall Pipe

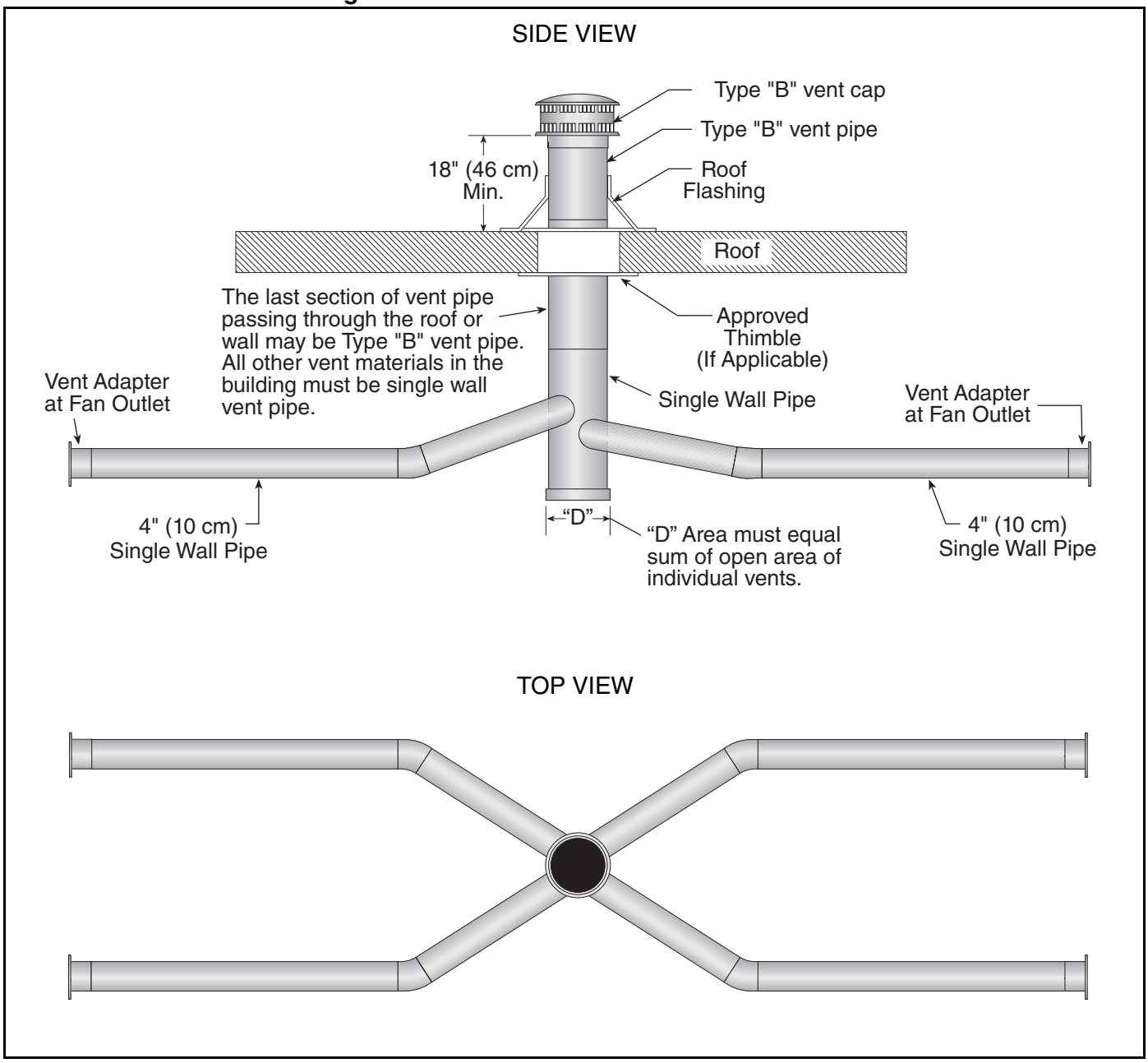
Description	Part Number
Vent Cap 4" (10 cm)	90502300
Vent Cap 6" (15 cm)	90502302

12.9 Common Sidewall Venting

TOP VIEW


Vent Terminal
Tjernlund VH1-6 or Equivalent
Outside Wall
6" (15 cm) Single Wall Pipe
Sweeping 'T' Connection
4" (10 cm) Single Wall Pipe
Vent Terminal
Tjernlund VH1-6 or Equivalent
Outside Wall
6" (15 cm) Single Wall Pipe
Sweeping 'Y' Connection
4" (10 cm) Single Wall Pipe
4" (10 cm) Single Wall Pipe

12.10 Common Vertical Venting



SECTION 13: VENTING - MULTIBURNER SYSTEMS

13.1 General Requirements

See Page 50, Section 11.1. All general venting requirements apply.

⚠ WARNING

Carbon Monoxide Hazard

Multiburner systems are not approved for unvented use and must be vented outdoors.

Vented heaters must be installed according to the installation manual.

Failure to follow these instructions can result in death or injury.

13.2 Manifold Tube Requirements

Manifold tube is used to connect radiant tubing to the pump. When more than one burner is connected to a pump, a special connection fitting is utilized, such as a cross or tee section. *See Figure 26*. It is recommended that 4" (10.2 cm) O.D. or 6" (15.2 cm) O.D. aluminized or coated tubing be used for manifold pipe. Reflectors are not required, but may be used over 4" (10.2 cm) manifold pipe. Manifold pipe must be supported properly, with at least one hanger per 10' (3 m) section. Refer to *Page 26, Section 9* for manifold length design requirements.

13.3 Venting the Pump

The exhaust connection from the pump is 4" (10.2 cm) or 6" (15.2 cm) diameter. Connect one of the flexible isolation boots provided to the flue pipe. Connections to the flue pipe larger than the pump outlet diameter will require the use of an appropriate adapter (not supplied).

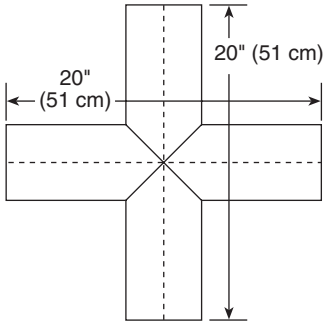
Venting from the pump may discharge either horizontally or vertically; corrosion resistant pipe is required. *See Page 57, Figure 28* for pump vent length requirements.

The layout drawing shows the general location of the pump. Specific pump location and discharge details must meet general venting requirements (see *Page 50, Section 11* and *Section 13.1*) as well as the following criteria:

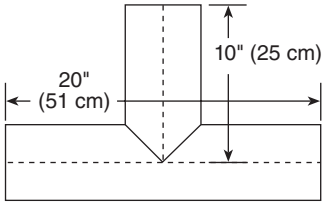
- To avoid staining the building wall, extend discharge 3' (1 m) from the building if possible.
- Horizontal discharge is preferred, *see Page 57, Figure 28*. Vertical discharge must be arranged as shown in *see Page 56, Figure 27*.

If the vent pipe is over 20' (6 m) long, insulate it to minimize condensation. Seal all discharge pipe joints with high-temperature silicone or equivalent.

FIGURE 26: Tailpipe Connection Points



Description	Part Number
Porcelain Coated Cross, 4" (10.2 cm) dia	0133092D
Aluminized Steel Cross, 4" (10.2 cm) dia	01330903
Aluminized Steel Cross, 6" (15.2 cm) dia	01330904



Description	Part Number
Porcelain Coated Tee, 4" (10.2 cm) dia	0133022D
Aluminized Steel Tee, 4" (10.2 cm) dia	01330203
Aluminized Steel Tee, 6" dia (15.2 cm)	01330204

13.4 EP-100 Pump Models

See EP-100 Installation, Operation and Service Manual (P/N 127201NA) for assembly details.

13.5 EP-200 Pump Series

See EP-200 Installation, Operation and Service Manual (P/N 127200NA) for assembly details.

13.6 EP-300 Pump Series

See EP-300 Series Installation, Operation and Service Manual (P/N 127202NA) for assembly details.

13.7 Installation Precautions

⚠ WARNING

Pumps are shipped partially assembled.

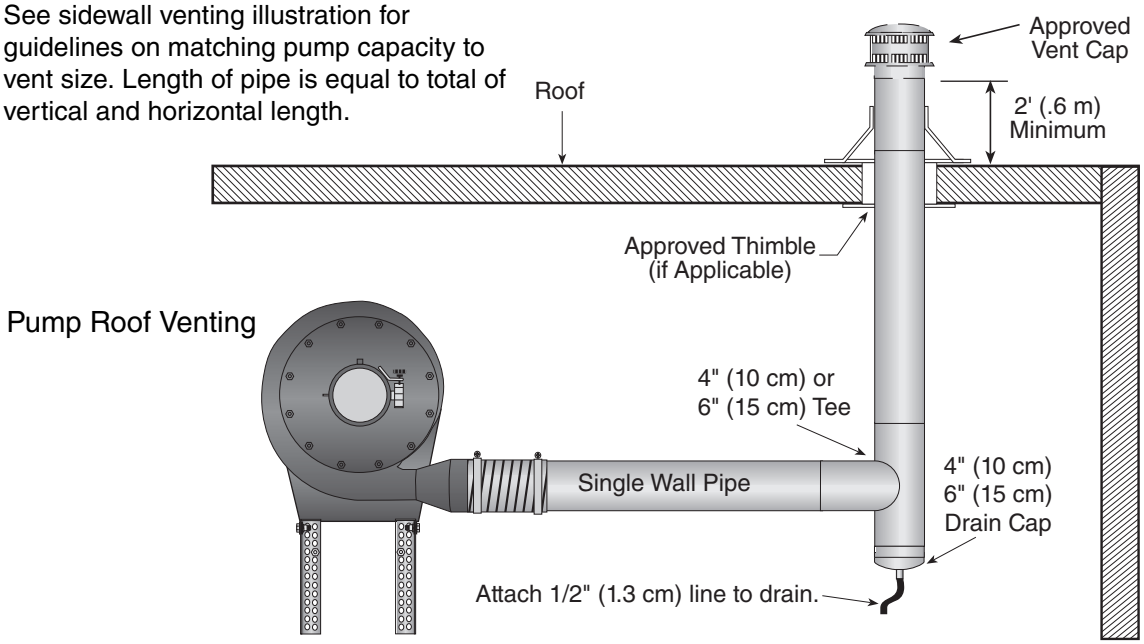
Do not operate a partially assembled pump.

Failure to follow these instructions could result in property damage, injury or death.

The pump scroll attaches to the pump frame (*See Page 57, Figure 28*) with either right- or left-hand discharge as the job requires. Please note that the motor must be wired differently depending on discharge direction. The discharge must be bottom horizontal. Any other arrangement will permit condensate to collect in the scroll.

FIGURE 27: Roof Venting of Pump

See sidewall venting illustration for guidelines on matching pump capacity to vent size. Length of pipe is equal to total of vertical and horizontal length.

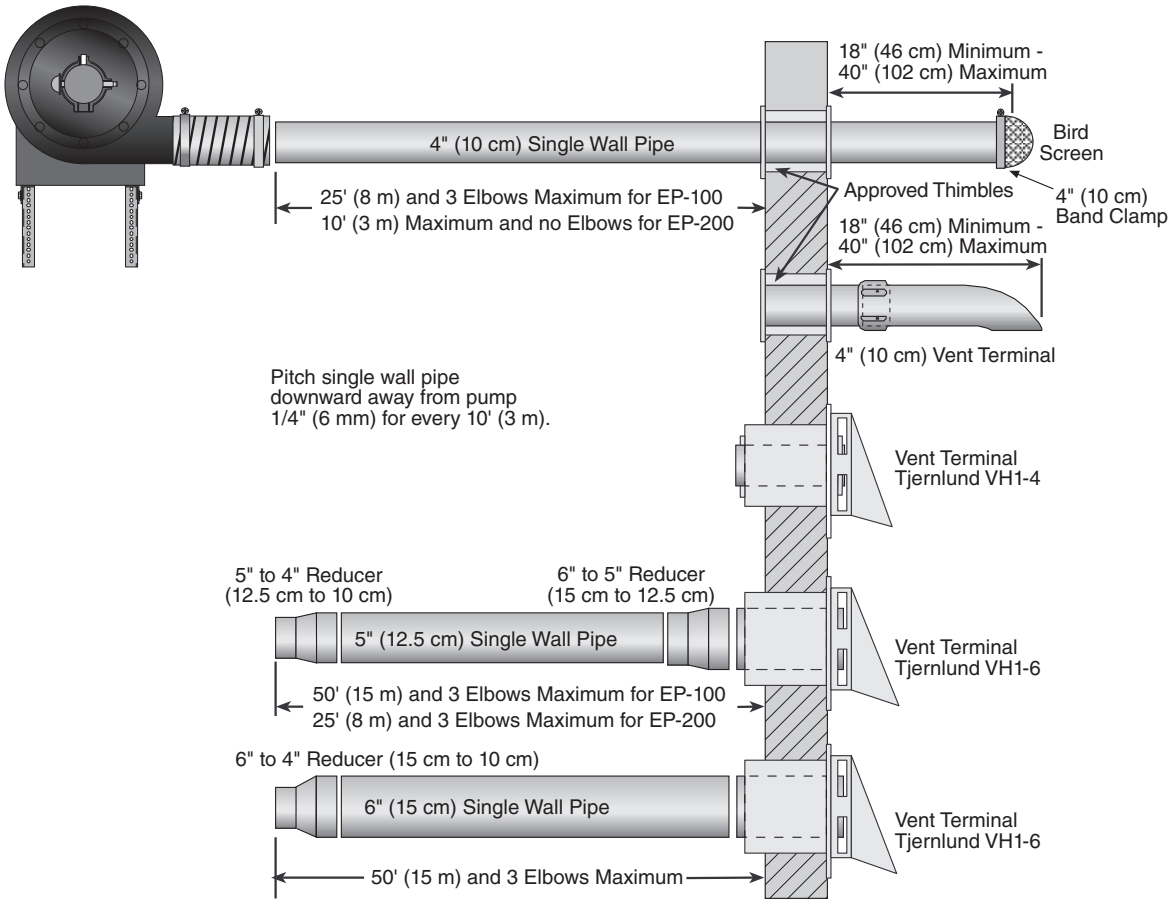

Approved Vent Cap
Roof
2' (.6 m) Minimum
Approved Thimble (if Applicable)
Pump Roof Venting
4" (10 cm) or 6" (15 cm) Tee
Single Wall Pipe
4" (10 cm) 6" (15 cm) Drain Cap
Attach 1/2" (1.3 cm) line to drain.

Description	Part Number
Drain Cap, 4" (10.2 cm) dia	02718851
Drain Cap, 6" (15.2 cm) dia	02718852
Tee, 4" (10.2 cm)	01330203
Tee, 6" (15.2 cm)	01330204

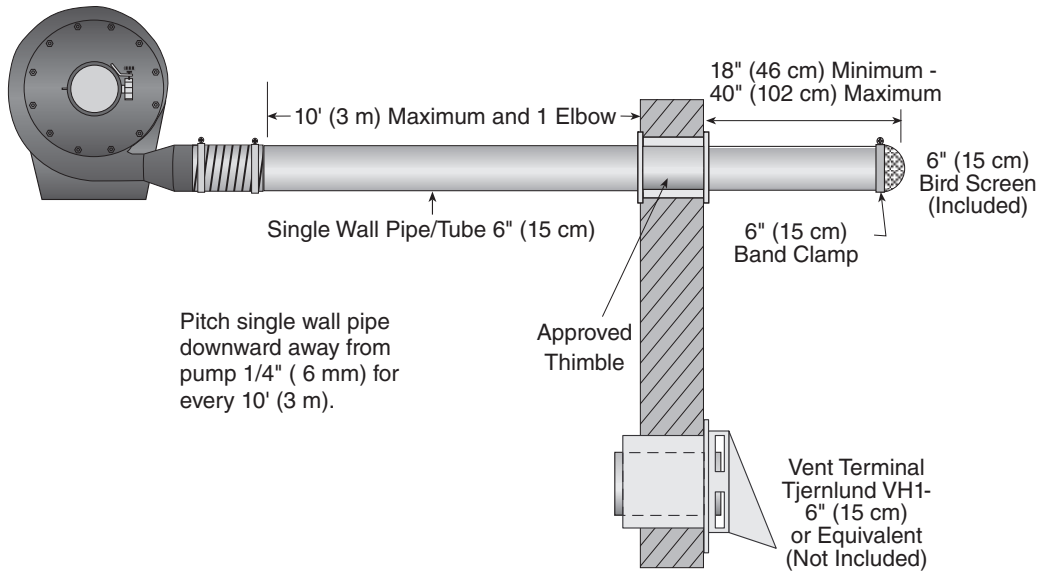
Description	Part Number
Vent Cap, 4" (10.2 cm)	90502300
Vent Cap, 6" (15.2 cm)	90502302
Wall Thimble, 4" (10.2 cm)	90505600

FIGURE 28: Side Wall Venting Configurations

EP-100 or EP-200 Pump Side Wall Venting


18" (46 cm) Minimum -
40" (102 cm) Maximum
4" (10 cm) Single Wall Pipe
Bird
Screen
25' (8 m) and 3 Elbows Maximum for EP-100
10' (3 m) Maximum and no Elbows for EP-200
Approved Thimbles
4" (10 cm)
Band Clamp
18" (46 cm) Minimum -
40" (102 cm) Maximum
4" (10 cm) Vent Terminal
Pitch single wall pipe
downward away from pump
1/4" (6 mm) for every 10' (3 m).
Vent Terminal
Tjernlund VH1-4
5" to 4" Reducer
(12.5 cm to 10 cm)
6" to 5" Reducer
(15 cm to 12.5 cm)
5" (12.5 cm) Single Wall Pipe
Vent Terminal
Tjernlund VH1-6
50' (15 m) and 3 Elbows Maximum for EP-100
25' (8 m) and 3 Elbows Maximum for EP-200
6" to 4" Reducer (15 cm to 10 cm)
6" (15 cm) Single Wall Pipe
Vent Terminal
Tjernlund VH1-6
50' (15 m) and 3 Elbows Maximum

EP-300 Vacuum Pump Side Wall Venting



Description	Part Number
Bird Screen 4" (10 cm)	01365400
Bird Screen, 6" (15 cm)	01397400
Band Clamp, 4" (10 cm)	91901300
Band Clamp, 6" (15 cm)	91913703

Description	Part Number
Wall Thimble, 4" (10 cm)	90505600
Vent Terminal, 4" (10 cm)	02537801-IP
Vent Terminal, Tjernlund VH1-4	90502100
Vent Terminal, Tjernlund VH1-6	90502101

SECTION 14: OUTSIDE COMBUSTION AIR SUPPLY

IMPORTANT: If the building has a slight negative pressure or corrosive contaminants (such as halogenated hydrocarbons) are present in the air, an outside combustion air supply to the heater is required. Seal all combustion air pipe joints.

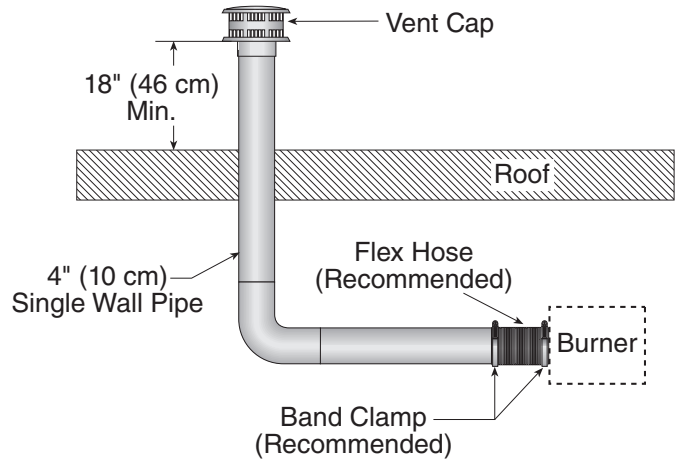
Use of optional outside combustion air is not recommended with unvented heaters.

The air supply duct may have to be insulated to prevent condensation on the outer surface. The outside air terminal must not be more than 1' (31 cm) above the vent terminal.

14.1 Length Requirements

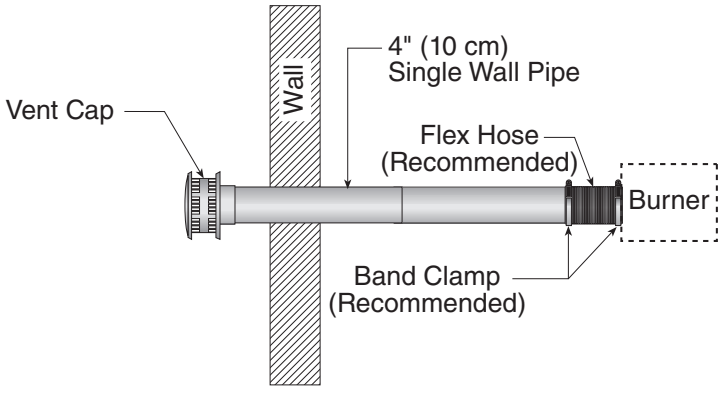
Follow the constraints listed *on Page 51, Section 12.5*.

14.2 Vertical Non-Pressurized Outside Air Supply for Single Heater Installation



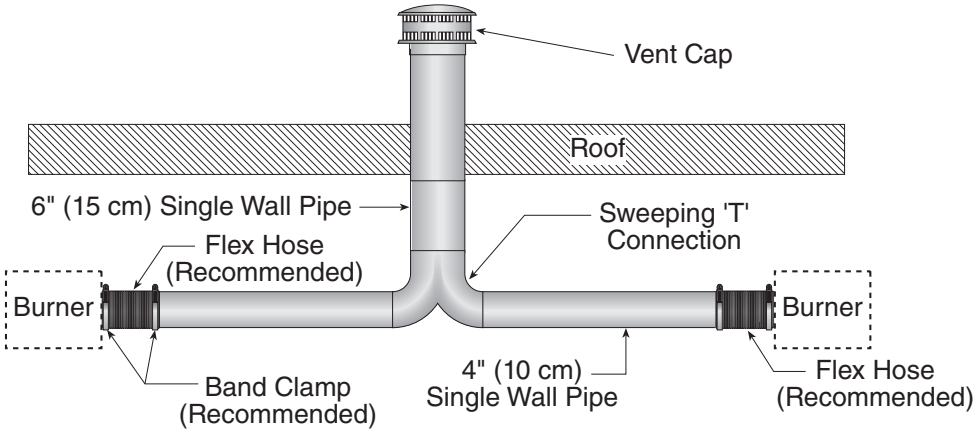
Description	Part Number
Vent Cap 4" (10 cm)	90502300

14.3 Horizontal Non-Pressurized Outside Air Supply for Single Heater Installation



Description	Part Number
Vent Cap 4" (10 cm)	90502300

14.4 Vertical Non-Pressurized Outside Air Supply for Double Heater Installation

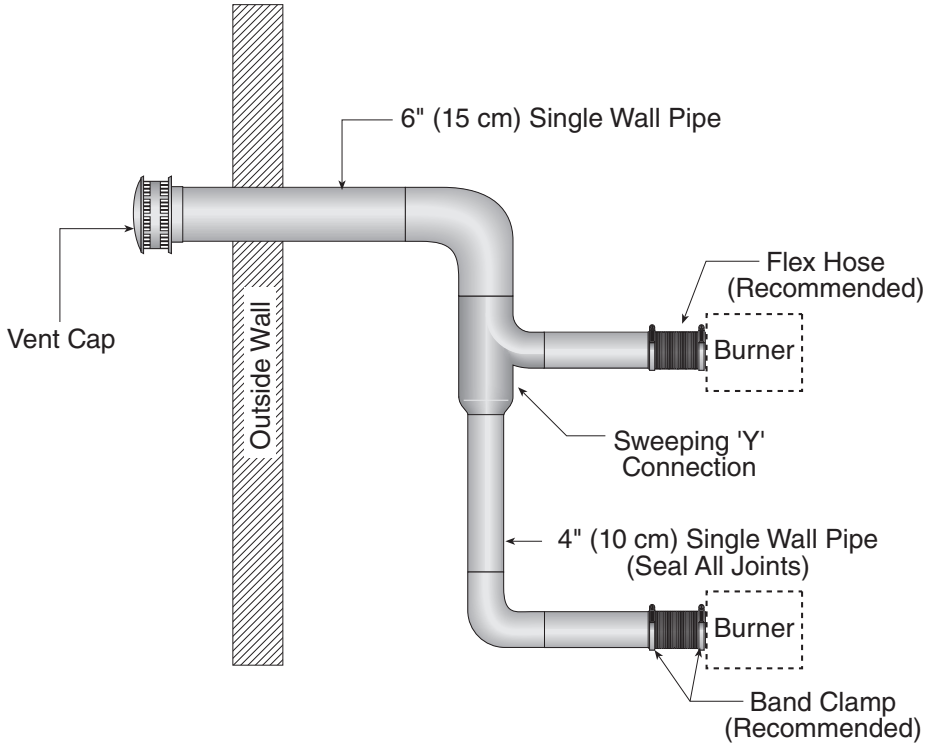


Description	Part Number
Vent Cap 6" (15 cm)	90502302

Requirements:

- Heaters must be controlled by a common thermostat.

14.5 Horizontal Non-Pressurized Outside Air Supply for Double Heater Installation

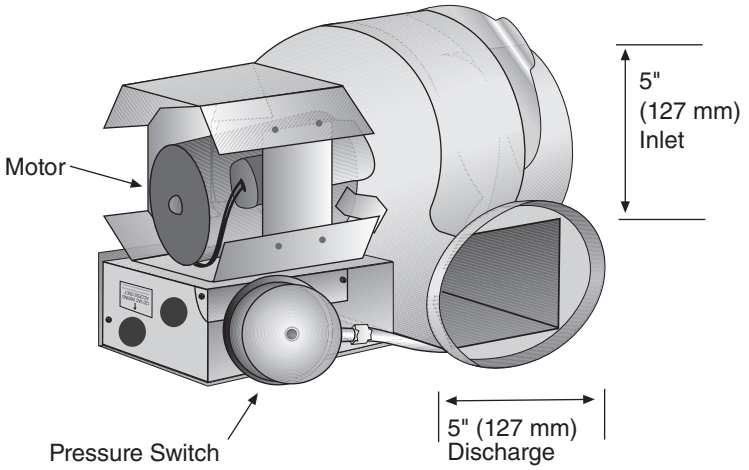


Description	Part Number
Vent Cap 6" (15 cm)	90502302

Requirements:

- Heaters must be controlled by a common thermostat.

14.6 Pressurized Outside Air Supply



If used, the outside air supply blower (P/N 90707501) should be wired in parallel with the pump, and in accordance with the National Electric Code and local ordinances. The blower air pressure switch must be wired in series with the pressure switch on the pump.

All joints and seams in the air supply system must be airtight. See above instructions on attaching duct to the burner. Mount the blower according to the manufacturer's instructions. Additional mounting materials are provided by the contractor.

SECTION 15: WIRING

⚠ WARNING

Electrical Shock Hazard

Disconnect electrical power and gas supply before servicing.

This appliance must be connected to a properly grounded electrical source.

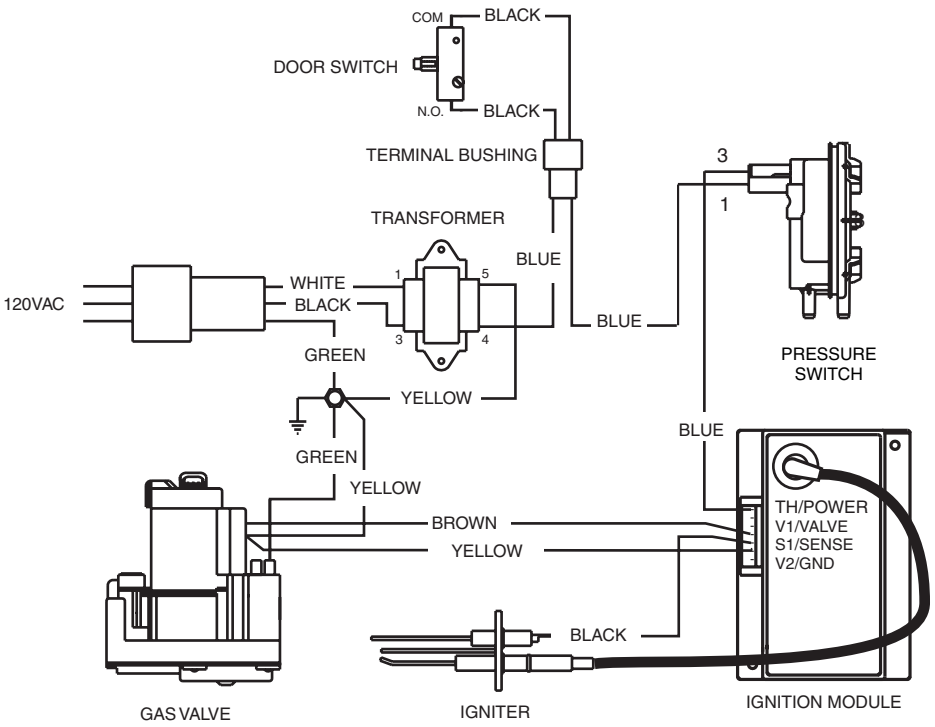
Failure to follow these instructions can result in death or electrical shock.

15.1 Internal Wiring

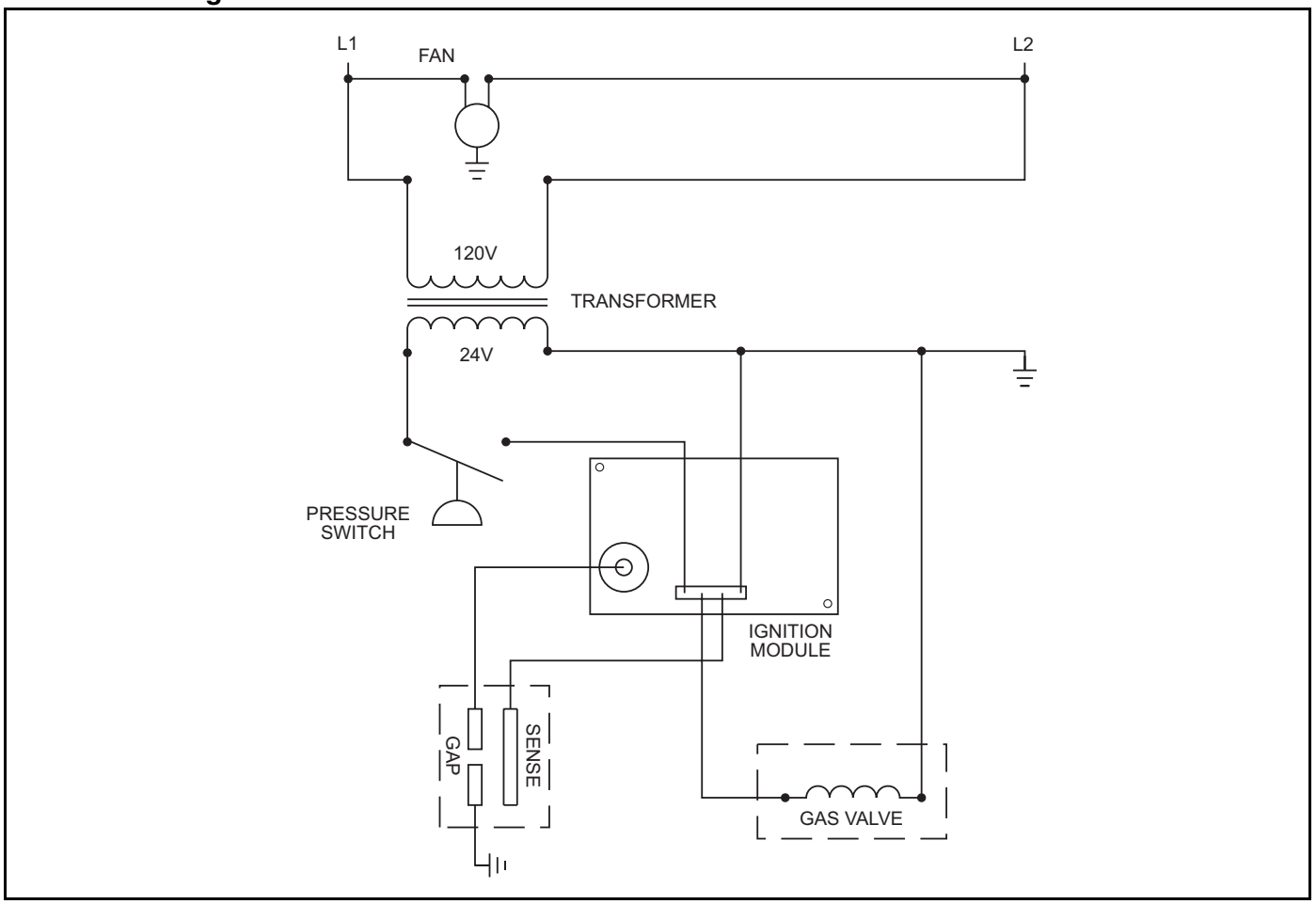
Heaters must be grounded in accordance with applicable codes: United States: refer to National Electrical Code® ANSI/NFPA 70 - latest revision; Canada: refer to Canadian Electrical Code CSA C22.1 Part I - latest revision.

If any of the original internal wiring must be replaced, it must be replaced with wiring materials having a temperature rating of at least 105°C and 600 volts.

15.2 Internal Wiring



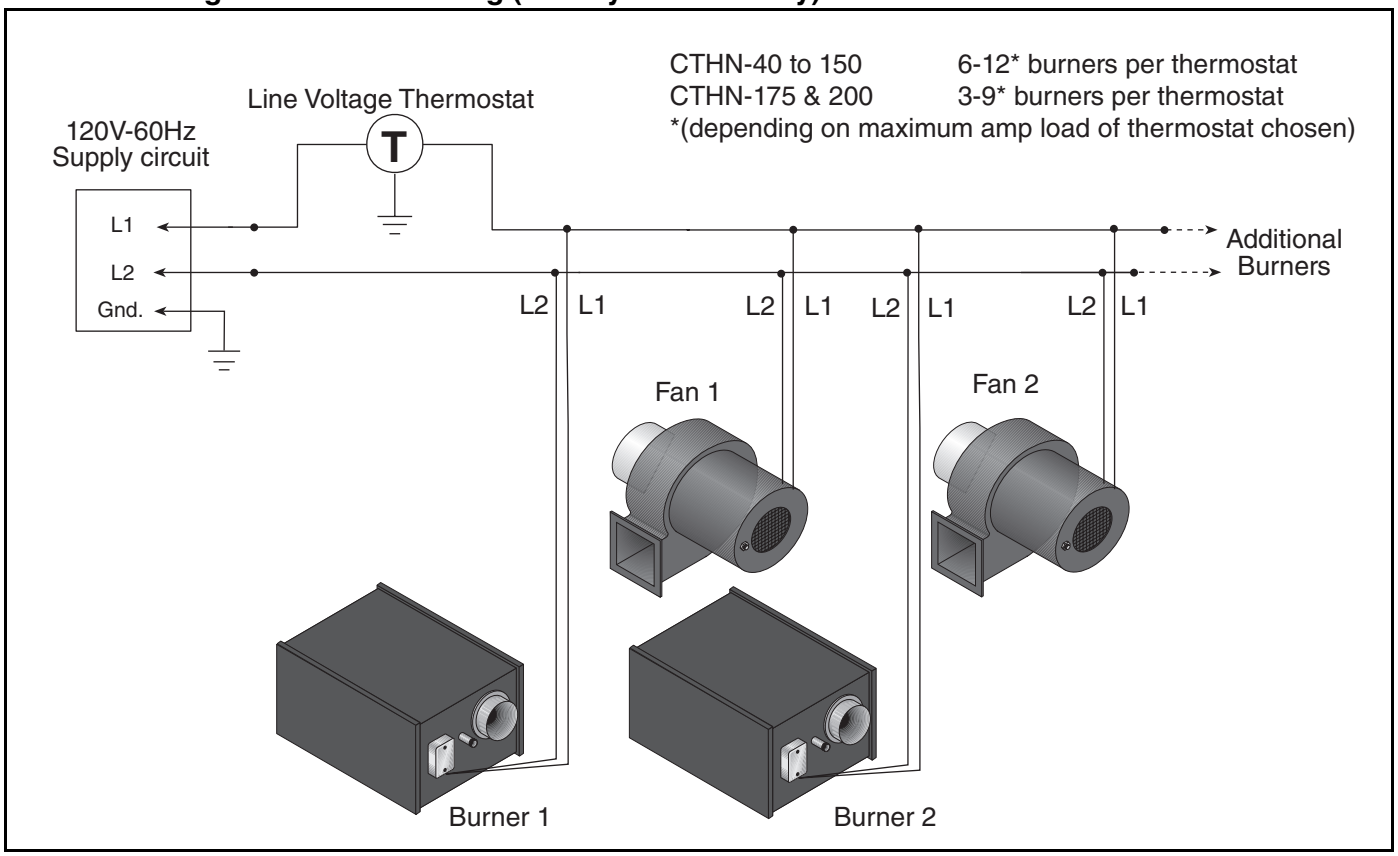
15.3 Ladder Diagram



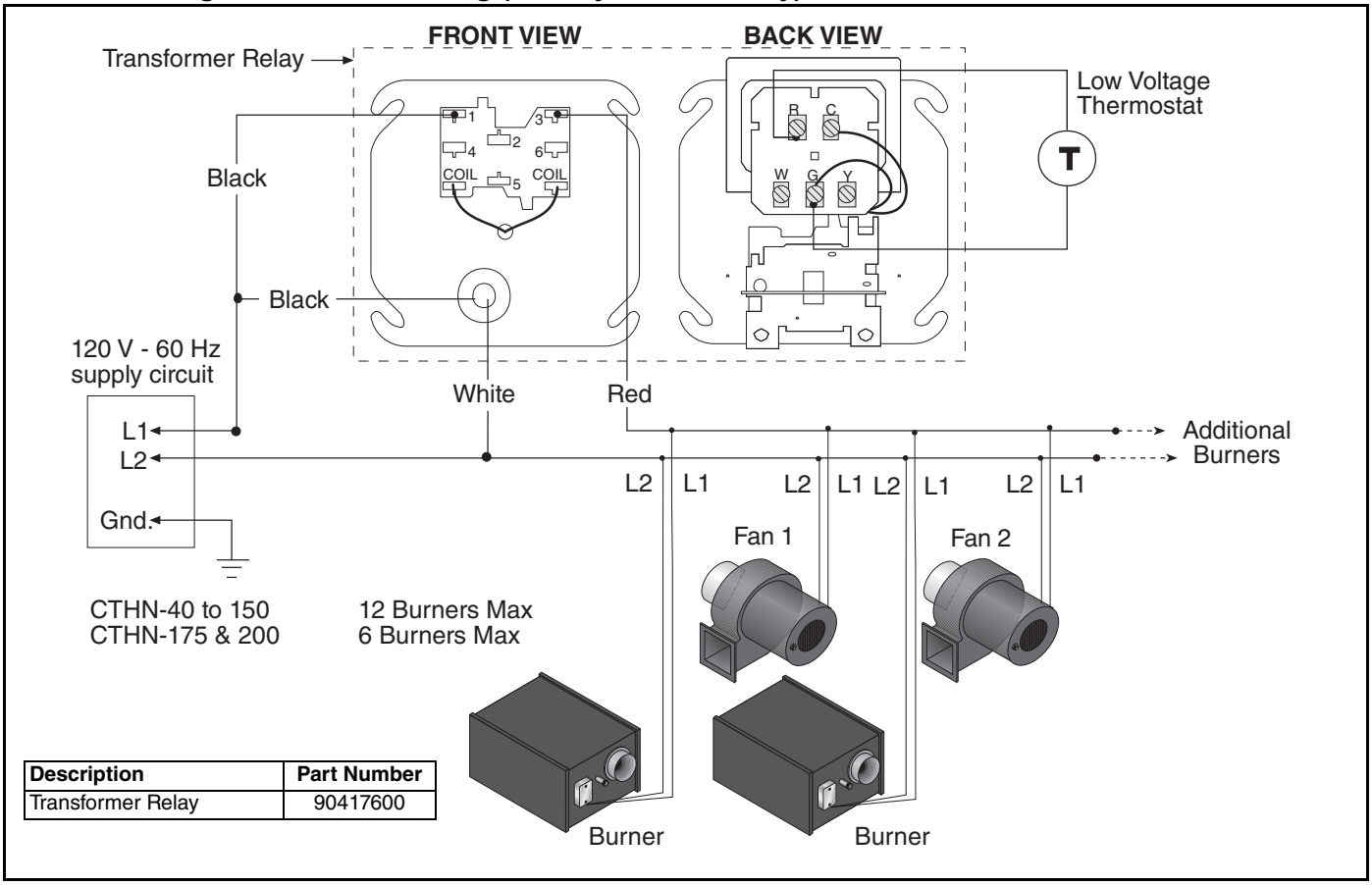
15.4 External Wiring (Unitary Heaters Only)

Heaters can be controlled using several methods. Normally thermostats are used to control the heaters, but they can also be controlled by an energy management system. *Page 63, Section 15.5* illustrates the connection for heaters controlled by a line voltage thermostat. For single or multiple heaters on one low voltage thermostat, *see Page 63, Section 15.6*.

15.5 Line Voltage Thermostat Wiring (Unitary Heaters Only)



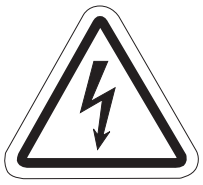
15.6 Low Voltage Thermostat Wiring (Unitary Heaters Only)



Description	Part Number
Transformer Relay	90417600

15.7 System Control Methods and External Multiburner Wiring

⚠ WARNING



Electrical Shock Hazard

Disconnect electrical power and gas supply before servicing.

This appliance must be connected to a properly grounded electrical source.

Failure to follow these instructions can result in death or electrical shock.

There are several methods of controlling CTHN-Series systems. The options are as follows:

15.7.1 ROBERTS GORDON® System Control

The System Control is an electronic control panel designed to control CTHN-Series heating systems. The System Control wiring is shown *on Page 64, Figure 29 through Page 66, Figure 32* and in the System Control Installation Manual (P/N 10091601NA). The System Control can be used to control an EP-100 or EP-201 pump from the control panel. Other pumps such as the EP-301 and 3 phase models may be controlled in conjunction with a relay or motor starter. The System Control can control up to four zones of burners.

The electrical circuit is a 120 Vac (20 A) supply.

The output for the thermostat is 12 Vdc. Do not use thermostats that draw power from the low voltage supply.

A System Control operated system has two minutes post purge pump operation to completely exhaust products of combustion from the system. A system control provides indication of power to the pump and zones and indicates the status of the pressure switch with lights.

The System Control is UL listed in accordance with UL873 – Standard for Temperature Indicating and Regulating Equipment.

FIGURE 29: General System Control Wiring (Multiburner)

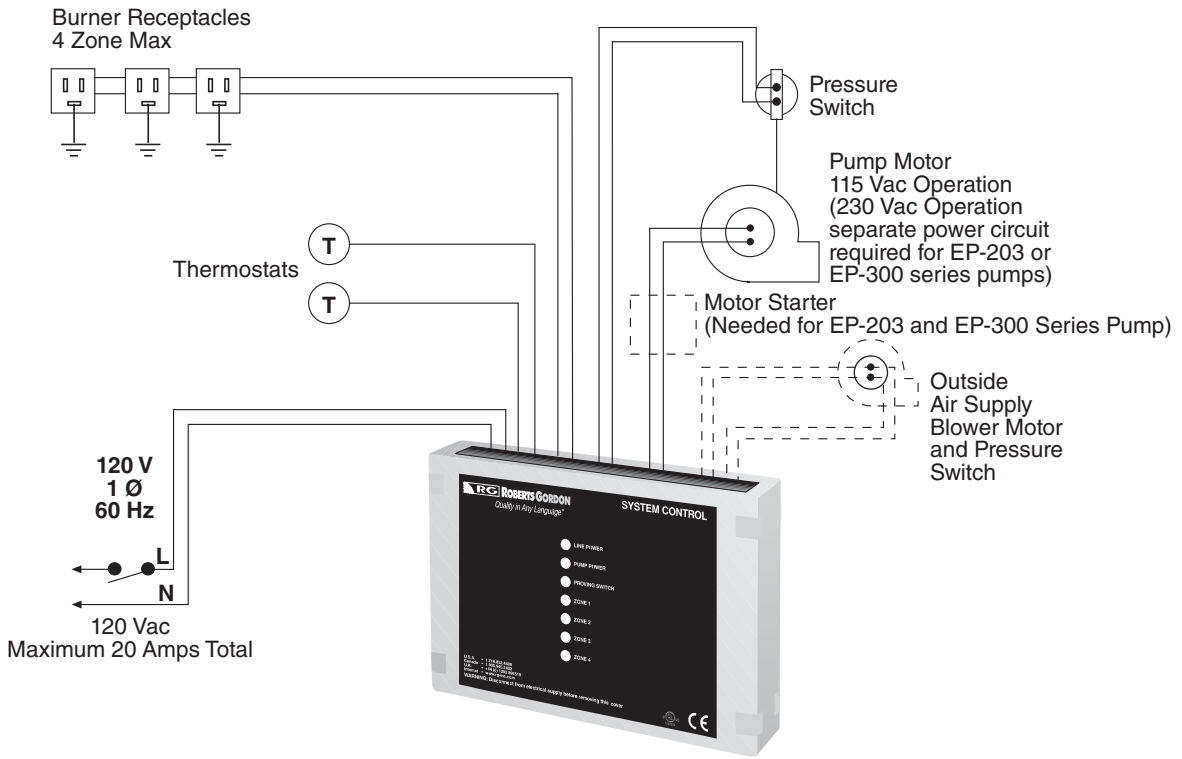


FIGURE 30: External Wiring Diagram EP-100 and EP-201 120 V 1 Ø Pump (Multiburner)

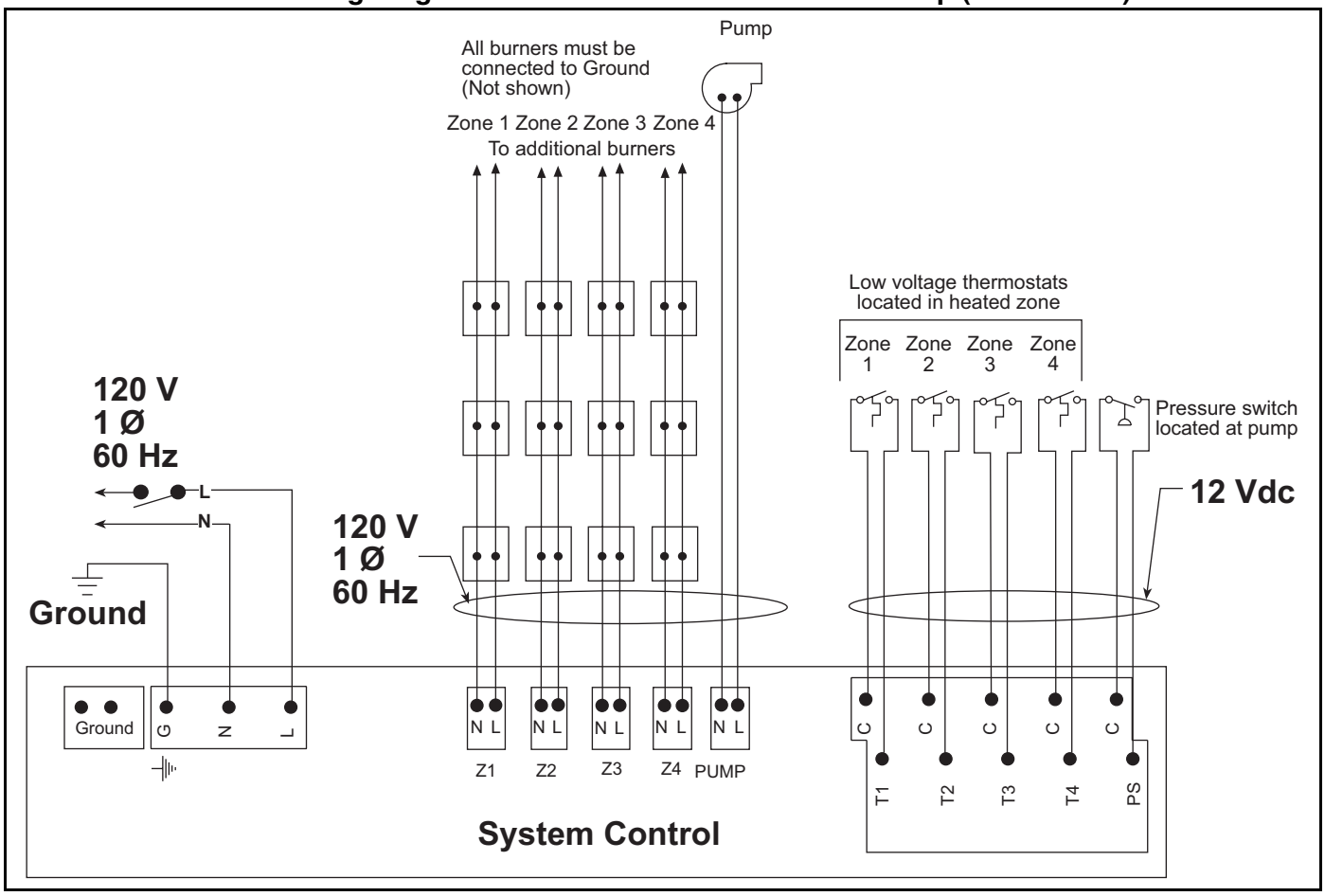
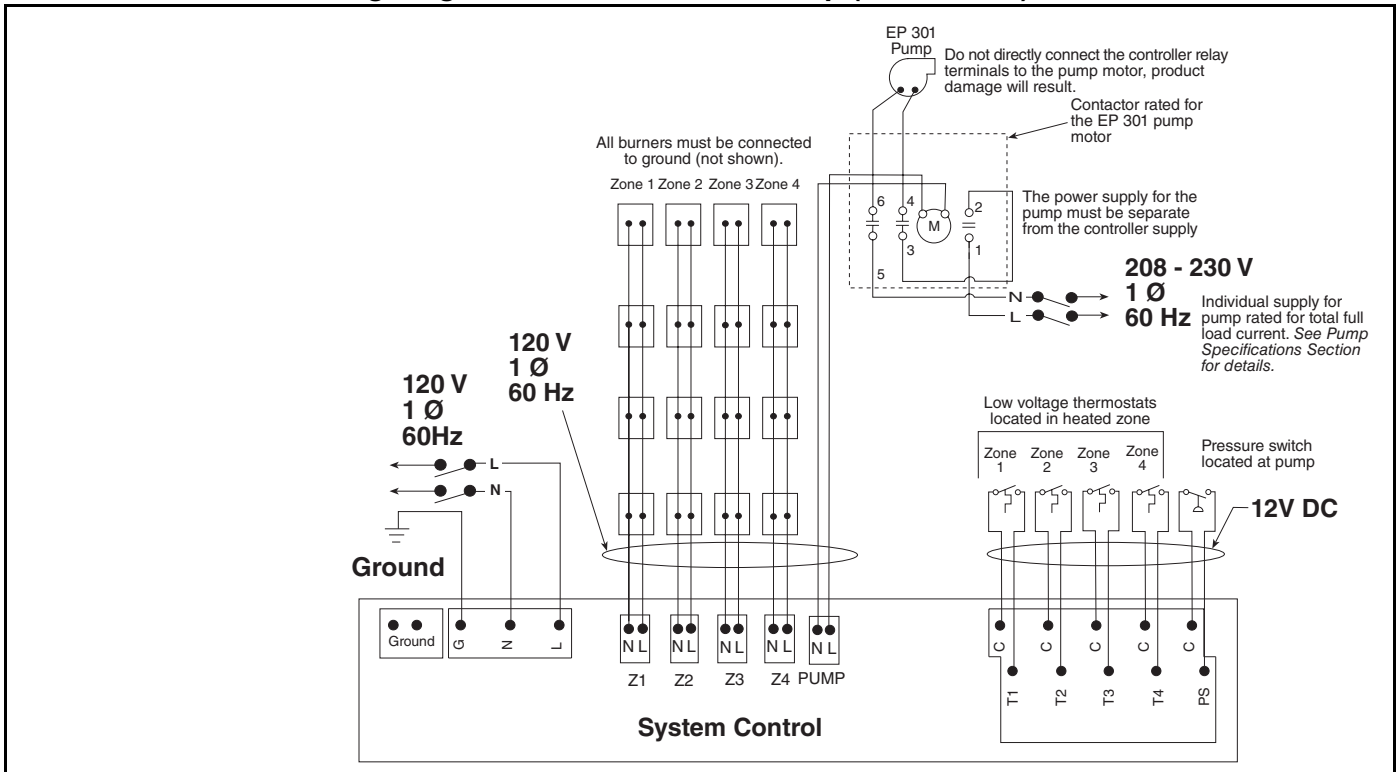
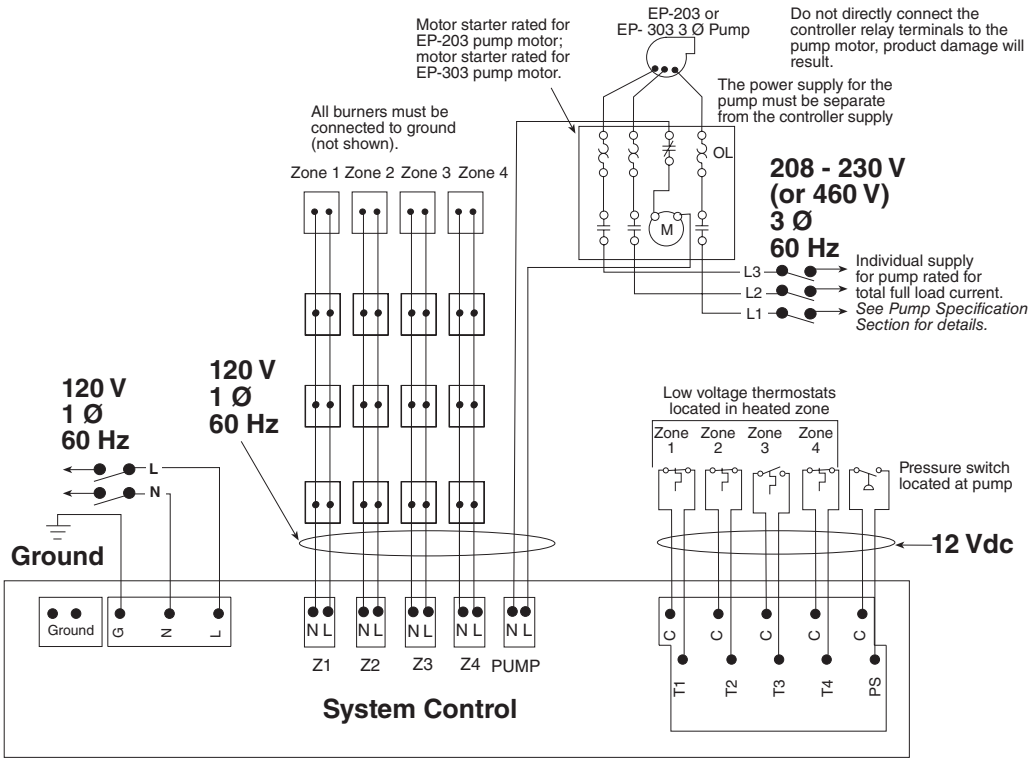


FIGURE 31: External Wiring Diagram EP-301 230 V 1 Ø Pump (Multiburner)



Description	Part Number
Contactor	10050009

FIGURE 32: External Wiring Diagram EP-203 or EP-303 3 Ø Pump (Multiburner)



Description	Part Number
Motor Starter for EP-203	10050001
Motor Starter for EP-303	10050010

15.7.2 SPST Transformer Relay (P/N 90417600)

The transformer relay wiring diagram is shown *on Page 67, Figure 33*. The transformer relay can be used to control an EP-100 or EP-201 pump CTHN system. The single pole relay can only be used to control one zone of burners.

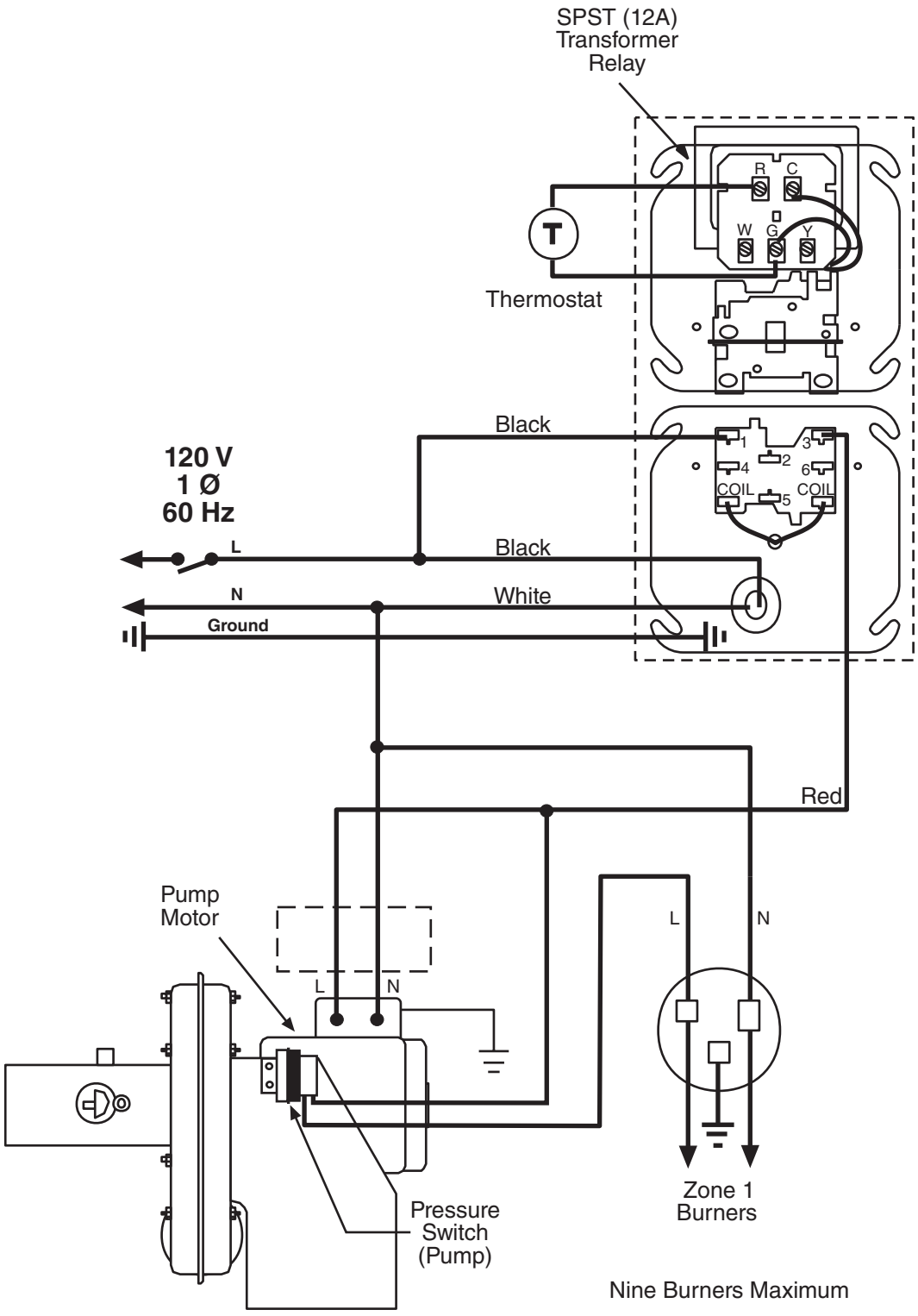
The electrical circuit is a 120V AC (20 A) supply. The transformer 24V AC output for the thermostat is rated at 40VA. Thermostats used with the transformer must not exceed this power requirement. A transformer relay operated system will not give any post purge pump operation to completely exhaust products of combustion from the system or provide indication of operating conditions.

15.7.3 DPST Transformer Relay (P/N 90436300)

The transformer relay wiring diagram is shown *on Page 68, Figure 34*. The transformer relay can be used to control an EP-100 or EP-201 pump CTHN system. The double pole relay can only be used to control two zones of burners.

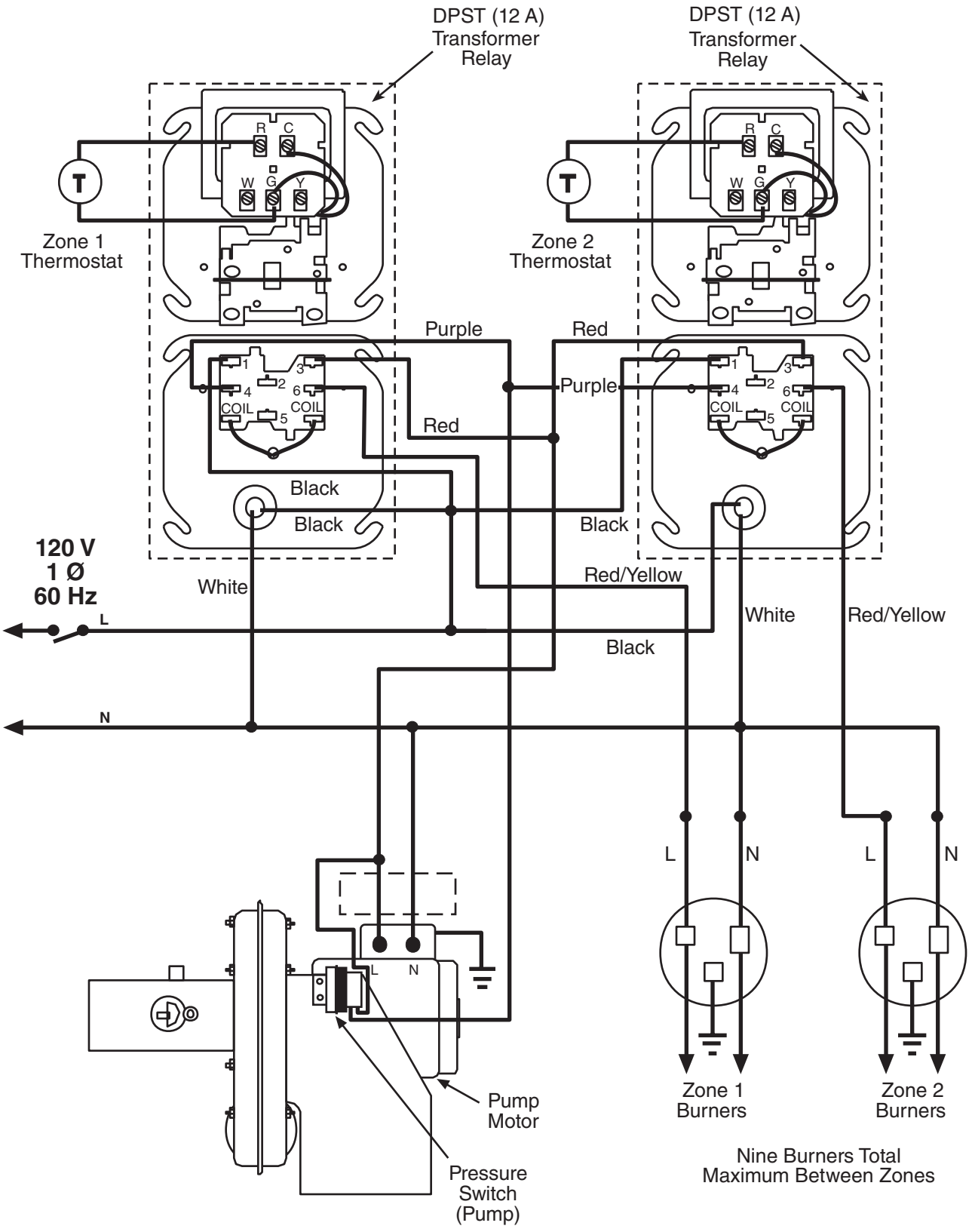
The electrical circuit is a 120V AC (20 A) supply. The transformer 24V AC output for the thermostat is rated at 40VA. Thermostats used with the transformer must not exceed this power requirement. A transformer relay operated system will not give any post purge pump operation to completely exhaust products of combustion from the system or provide indication of operating conditions.

FIGURE 33: One Zone Operation without Control Panel (Multiburner)



Description	Part Number
SPST Transformer Relay	90417600

FIGURE 34: Two Zone Operation without Control Panel (Multiburner)



Description	Part Number
DPST Transformer Relay	90436300

SECTION 16: GAS PIPING

⚠ WARNING

Fire Hazard

Tighten gas hose fittings to connect gas supply according to *Figure 35*.

Gas hose can crack when twisted.

Gas hose moves during normal operation.

Failure to follow these instructions can result in death, injury or property damage.

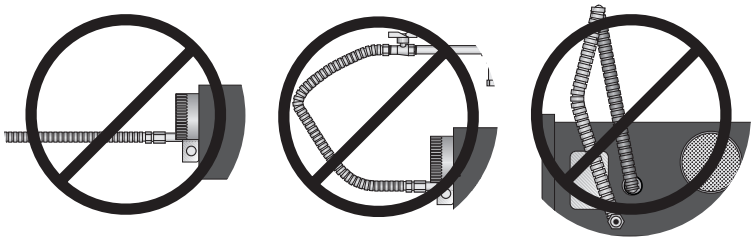
Install the gas hose as shown in *Figure 35*. The flex gas hose connector accommodates expansion of the heating system and allows for easy installation and service of the burner. Before connecting the burners to the supply system, verify that all high pressure testing of the gas piping has been completed.

There is an expansion of the tube with each firing cycle. This will cause the burner to move with respect to the gas line. This can cause a gas leak resulting in an unsafe condition if the gas connection is not made strictly in accordance with *Figure 35*.

Meter and service must be large enough to handle all the burners being installed plus any other connected load. The gas line which feeds the system must be large enough to supply the required gas with a maximum pressure drop of 1/2" wc When gas piping is not included in the layout drawing, the local gas supplier will usually help in planning the gas piping.

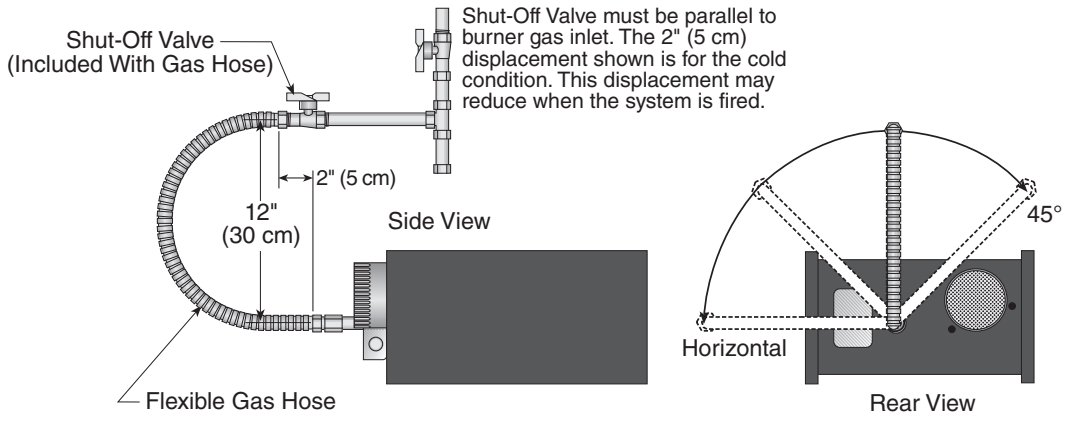
- **Do not high pressure test the gas piping with the burner connected. Failure to follow these instructions can result in property damage.**
- **Check the pipe and tubing ends for leaks before placing heating equipment into service. When checking for gas leaks, use a soap and water solution; never use an open flame.**

FIGURE 35: Gas Connection with Flexible Gas Hose



Hold gas nipple securely with pipe wrench when attaching the gas hose.

Failure to follow these instructions can result in product damage.


Shut-Off Valve
(Included With Gas Hose)
Shut-Off Valve must be parallel to burner gas inlet. The 2" (5 cm) displacement shown is for the cold condition. This displacement may reduce when the system is fired.
2" (5 cm)
12"
(30 cm)
Side View
Flexible Gas Hose
45°
Horizontal
Rear View

Description	Part Number
1/2" Flexible Stainless Steel Gas Hose (US Models)	91412200
3/4" Flexible Stainless Steel Gas Hose (US Models)	91412203
1/2" Rubber (Type 1) Gas Hose (Canadian Models)	91412206
3/4" Rubber (Type 1) Gas Hose (Canadian Models)	91412207

SECTION 17: OPERATION AND MAINTENANCE

The CTHN-Series heater is equipped with a direct spark ignition system.

⚠ WARNING

Explosion Hazard

Service and annual inspection must be done by a contractor qualified in the installation and service of gas-fired heating equipment or your gas supplier.

Turn off gas and electrical supplies before performing service or maintenance.

Failure to follow these instructions can result in death, injury or property damage.

17.1 Checking the Gas Line

1. Open main valve and verify that no gas is flowing through the gas meter.
2. Purge the line if this was not done following pressure testing with air.
3. Verify that the gas pressure is not above 14" wc (1/2 PSIG)
4. Close main gas valve.

17.2 Unitary Heater Sequence of Operation

1. Turn the thermostat up. When the thermostat calls for heat, the blower motor will energize.
2. When the fan motor achieves normal running RPM, the pressure switch within the burner closes and energizes the ignition module.
3. After a 45 second pre-purge, the ignition module then opens the gas valve and energizes the electrode. When the flame is established, the sparking sequence ceases.
4. If the flame is not established during the ignition sequence, the ignition module closes the gas valve and purge begins. The ignition module will try 2 additional times for ignition (with purge between). If ignition is not established, the module will lock-out.
   NOTE: After 1 hour, the module will reset automatically and return to steps 3 and 4.
5. If a flame is detected, the gas valve remains open. When the call for heat is satisfied the thermostat turns off the burner and fan power supply.
6. If the flame extinguishes during operation, the ignition module will attempt to re-establish the flame as described in the preceding step. If ignition is not re-established, the module will lock-out.
7. After lock-out, the control must be reset by turning down the thermostat for five seconds, then raising it again to the desired temperature, or by disconnecting and re-connecting power to the control.

17.2.1 To Shut Off Heater - Unitary

Set thermostat to lowest setting.

Turn OFF electric power to heater.

Turn OFF manual gas valve in the heater supply line.

17.2.2 To Start Heater - Unitary

Turn gas valve and electric power OFF and wait five minutes for unburned gases to vent from heater.

Turn ON main gas valve.

Turn ON electric power.

Set thermostat to desired temperature. Burner should light automatically.

Once the heater is operating, keep away from heater. Do not touch any part of the heater because it is very hot.

17.3 Multiburner System Operation

17.3.1 Checking the Electrical System

1. Set all thermostats below room temperature.
2. Turn on power supply to the system controls.
3. Check to see that no part of the system (i.e. burners, pump, outside air supply blower) is powered.
4. Individually check each zone by energizing the thermostats separately. Each zone thermostat should start the pump immediately. When the pump reaches the nominal running RPM, the

pressure switch closes and activates the ignition module. A pre-purge period will precede burner ignition trial.

5. If more than one system is installed, be sure that no part of one system is affected by the controls of a different system.
6. Make a preliminary vacuum check at burners in branches which have an adjustable damper coupling. *See Page 72, Figure 36* for vacuum measuring instructions. This check is to ensure that all dampers are open before the system is fired. The vacuum measured in the burner control housing should be more than .75" wc.

17.3.2 Starting the System - Multiburner

Note: During the initial firing, the protective oil on the tube may smoke for 30 to 60 minutes and adequate ventilation should be provided.

1. Start with all thermostats below room temperature.
2. Open main gas valve.
3. Turn up thermostats one at a time, waiting to see that all burners in a zone start. When the burner ignites, a blue flame will be observed through the viewer window.
4. If any abnormal operation occurs, *see Page 76, Section 18*.

17.3.3 Sequence of Operation - Multiburner

1. Thermostat, on a call for heat, signals the control panel or relay contacts to energize the pump motor. The pump (and outside air supply blower, if used) are activated.
2. When the pump motor achieves normal running RPM, the pressure switch at the pump inlet closes.
3. After a minimum 45-60 second pre-purge delay (system control only), the zone relay corresponding to the thermostat calling for heat is energized (system control only), and line voltage is directed to the burners in the zone.
4. When sufficient vacuum differential (*see Page 71, Section 17.3.6*) is available at the burner and the control system is supplying line voltage to the burner, the pressure switch within the burner closes and energizes the ignition module.
5. After a 45 second pre-purge, the ignition module opens the gas valve and energizes the electrode. When the flame is established, the sparking sequence ends.
6. If the flame is not established during the ignition sequence, the ignition module closes the gas valve and purge begins. The ignition module will try 2 additional times for ignition (with purge between). If ignition is not established, the module will lock-out.
   NOTE: After 1 hour, the module will reset automatically and return to steps 5 and 6.
7. If a flame is detected, the gas valve remains open. When the call for heat is satisfied, the system control or relay de-energizes the burner and pump power supply. When using the system control, the pump turns off after a post-purge period.
8. If the flame extinguishes during operation, the ignition module will attempt to re-establish the flame. If ignition is not re-established, the module will lock-out.
9. After lock-out, the control must be reset by turning down the thermostat for five seconds, then raising it again to the desired temperature, or by disconnecting and re-connecting power to the control.

17.3.4 To Shut Off Heater - Multiburner

See Page 70, Section 17.2.1.

17.3.5 To Start Heater - Multiburner

See Page 70, Section 17.2.2

17.3.6 Setting the Vacuum - Multiburner

1. Set thermostats above room temperature. See that all burners are operating properly.
2. Allow at least one-half hour operation for temperature to normalize before checking system vacuum balance. Vacuum differential can be measured by connecting a manometer

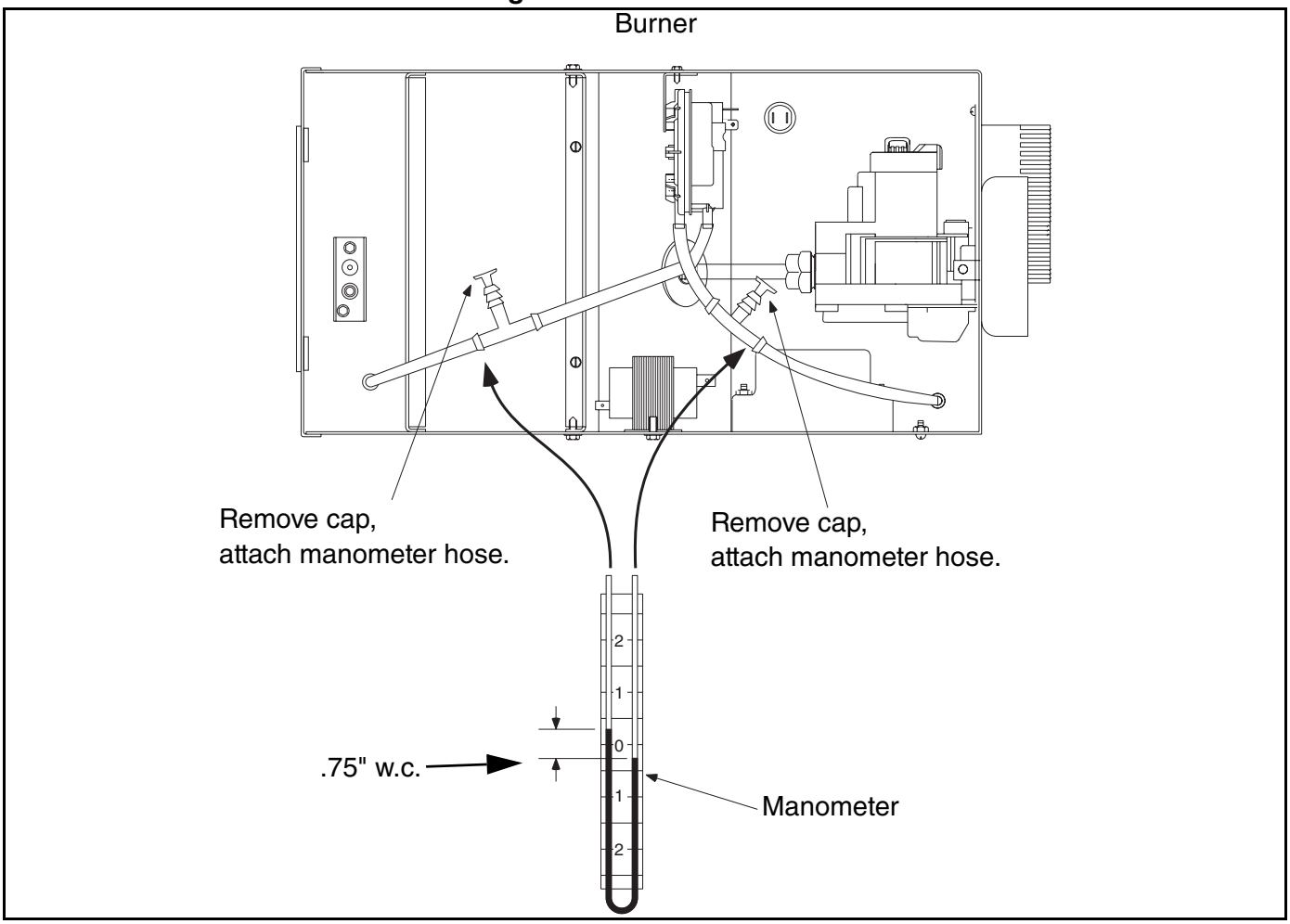
across the “tee” tappings inside the control housing (after measurement, the caps must be installed on the “tees” to prevent leakage). See *Figure 36* for manometer connection to burner control housing.

3. Approximately 1.0'' of vacuum differential is required at the burner when the system is cold. Normal operating (hot) differential of the burners should be adjusted to .75" wc.

Vacuum adjustments are made by means of the pump inlet damper and the adjustable damper coupling(s). Check the vacuum differential at all burners, then adjust the damper coupling to obtain equal vacuum differential readings. Adjust the pump inlet damper until vacuum differentials at the burners are as given above. With systems designed to capacity, it may not be possible to obtain vacuum differential readings at slightly above 1" wc (when cold). If so, adjust damper couplings to maximum but approximately equal vacuum readings. Be sure to lock all dampers securely after adjustment.

4. Reset thermostats to desired room temperature.
5. If heat is not required, turn off main switch and close main gas valve.

FIGURE 36: Vacuum Differential Reading



17.4 Maintenance

17.4.1 Pre-Season Maintenance and Annual Inspection

⚠ WARNING

Explosion Hazard

Service and annual inspection must be done by a contractor qualified in the installation and service of gas-fired heating equipment or your gas supplier.

Turn off gas and electrical supplies before performing service or maintenance.

Failure to follow these instructions can result in death, injury or property damage.

To ensure your safety and years of trouble-free operation of the heating system, service and annual inspections must be done by a contractor qualified in the installation and service of gas-fired heating equipment.

Turn off gas and electric supplies before performing service or maintenance. Allow heater to cool before servicing.

Before every heating season, a contractor qualified in the installation and service of gas-fired heating equipment must perform a thorough safety inspection of the heater.

For best performance, the gas, electrical, thermostat connections, tubing, venting, suspensions and overall heater condition should be thoroughly inspected.

NOTE: Gas flow and burner ignition are among the first things that should be inspected.
Please *see Page 74, Section 17.5* for suggested items to inspect.

17.5 Maintenance Checklist

⚠ WARNING

Explosion Hazard

Service and annual inspection must be done by a contractor qualified in the installation and service of gas-fired heating equipment or your gas supplier.

Turn off gas and electrical supplies before performing service or maintenance.

Failure to follow these instructions can result in death, injury or property damage.

Installation Code and Annual Inspections:
All installations and service of ROBERTS GORDON® products must be performed by a contractor qualified in the installation and service of products sold and supplied by Roberts-Gordon and conform to all requirements set forth in the ROBERTS GORDON® manuals and all applicable governmental authorities pertaining to the installation, service and operation of the equipment.

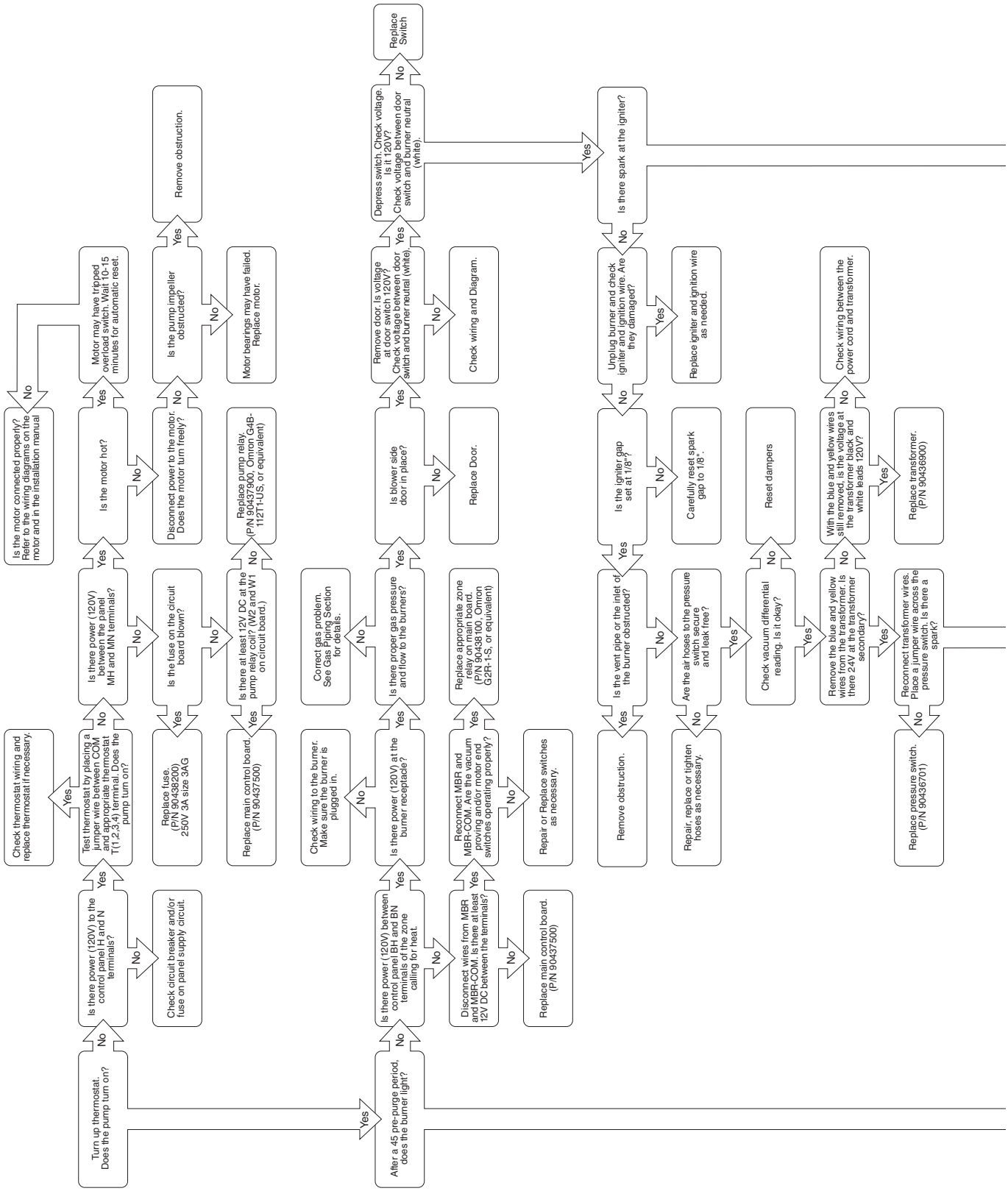
To help facilitate optimum performance and safety, Roberts-Gordon recommends that a qualified contractor annually inspect your ROBERTS GORDON® products and perform service where necessary, using only ROBERTS GORDON® replacement parts.

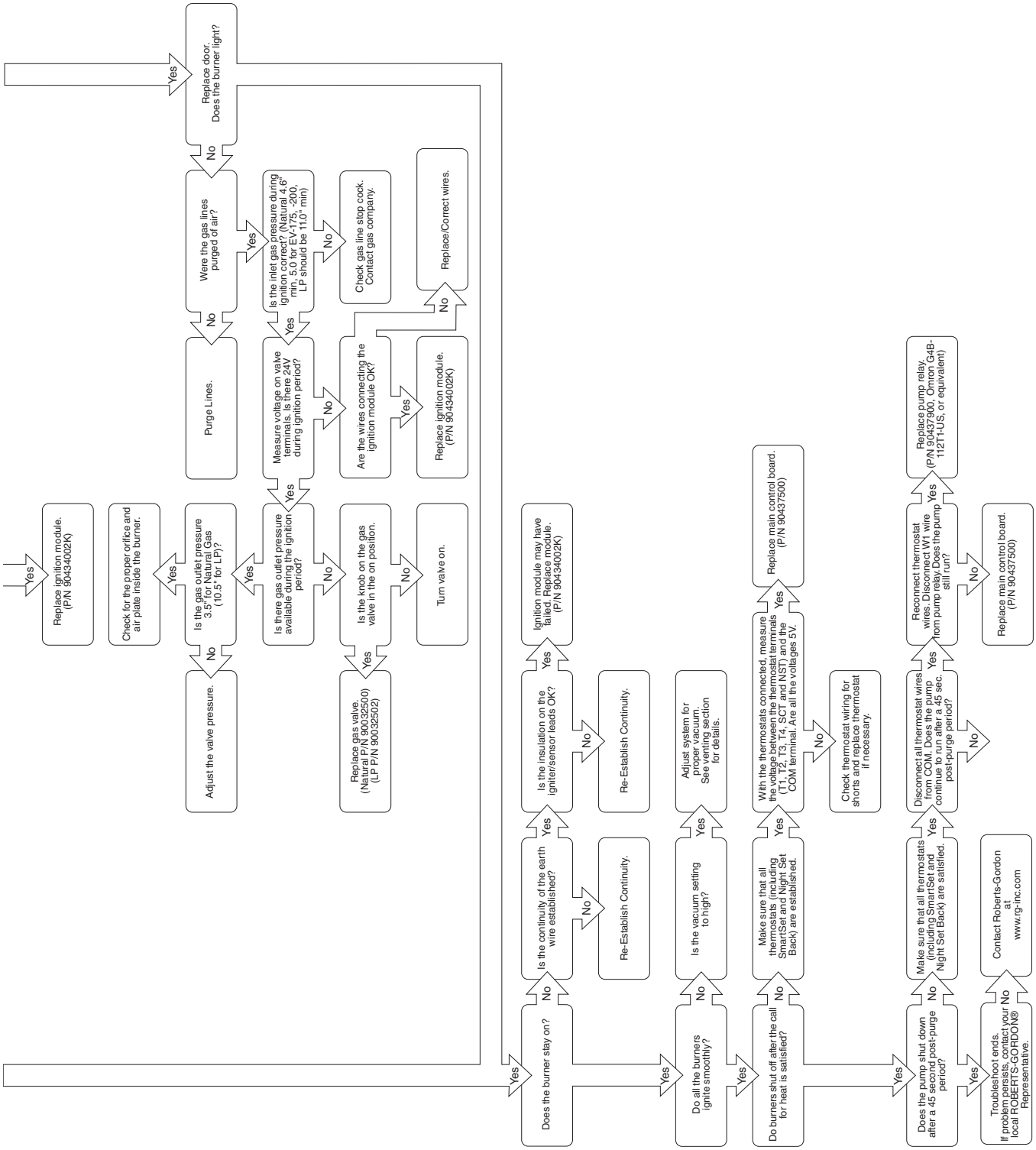
The Vicinity of the Heater	Do not store or use flammable objects, liquids or vapors near the heater. Immediately remove these items if they are present. *See Page 3, Section 3*.
Vehicles and Other Objects	Maintain the clearances to combustibles. Do not hang anything from, or place anything on, the heater. Make sure nothing is lodged underneath the reflector, in between the tubes or in the decorative or protective grilles (included with select models). Immediately remove objects in violation of the clearances to combustibles. *See Page 3, Section 3*.
Reflector	Make sure there is no dirt, sagging, cracking or distortion. Do not operate if there is sagging, cracking or distortion. Make sure reflectors are correctly overlapped. *See Page 23, Section 8.9.1*. Clean outside surface with a damp cloth.
Vent Pipe	Venting must be intact. Using a flashlight, look for obstructions, cracks on the pipe, gaps in the sealed areas or corrosion. The area must be free of dirt and dust. Remove any carbon deposits or scale using a wire brush. Inspect pump and flue pipe for soot or dirt or any obstruction to the outdoors. After cleaning as necessary, reattach the flue pipe to the heater. Inspect acoustical boots for cracks and leaks. Replace as necessary. *See Page 50, Section 11*.
Outside Air Inlet	Inlet must be intact. Look for obstructions, cracks on the pipe, gaps in the sealed areas or corrosion. The area must be free of dirt and dust. Clean and reinstall as required.

Tubes	Make sure there are no cracks. Make sure tubes are connected and suspended securely. *See Page 10, Figure 12*. Make sure there is no dirt, sagging, bending or distortion. Clean or replace as required.
Gas Line	Check for gas leaks. *See Page 69, Section 16*.
Burner Observation Window	Make sure it is clean and free of cracks or holes. Clean or replace as required.
Blower Scroll, Wheel and Motor	Compressed air or a vacuum cleaner may be used to clean dust and dirt.
Burner Cup and Orifice	Make sure it is clear of obstructions (even spider webs will cause problems). Carefully remove any dust and debris from the burner.
Electrode	Replace if there are cracked ceramics, excessive carbon residue, or erosion of the electrode. The electrode gap should be 1/8" (3.2 mm).
Thermostat	There should be no exposed wire or damage to the thermostat. *See Page 63, Section 15.5*.
Suspension Points	Make sure the heater is hanging securely. Look for signs of wear on the chain or ceiling. *See Page 10, Figure 12*.
Decorative and Protective Grille (optional)	The grille must be securely attached. Check that side reflector extensions are installed correctly and secured in place if necessary. (Decorative grille only.) *See Page 45, Section 10.4 through Page 49, Section 10.6* Make sure shield is installed correctly and secured in place if necessary. (Decorative grille only.) *See Page 46, Section 10.4.2*.
Lower Clearance Shield (optional)	The lower shield must be securely attached. *See Page 45, Section 10.3* . Make sure shield is installed correctly and secured in place if necessary. *See Page 45, Section 10.3.1*.

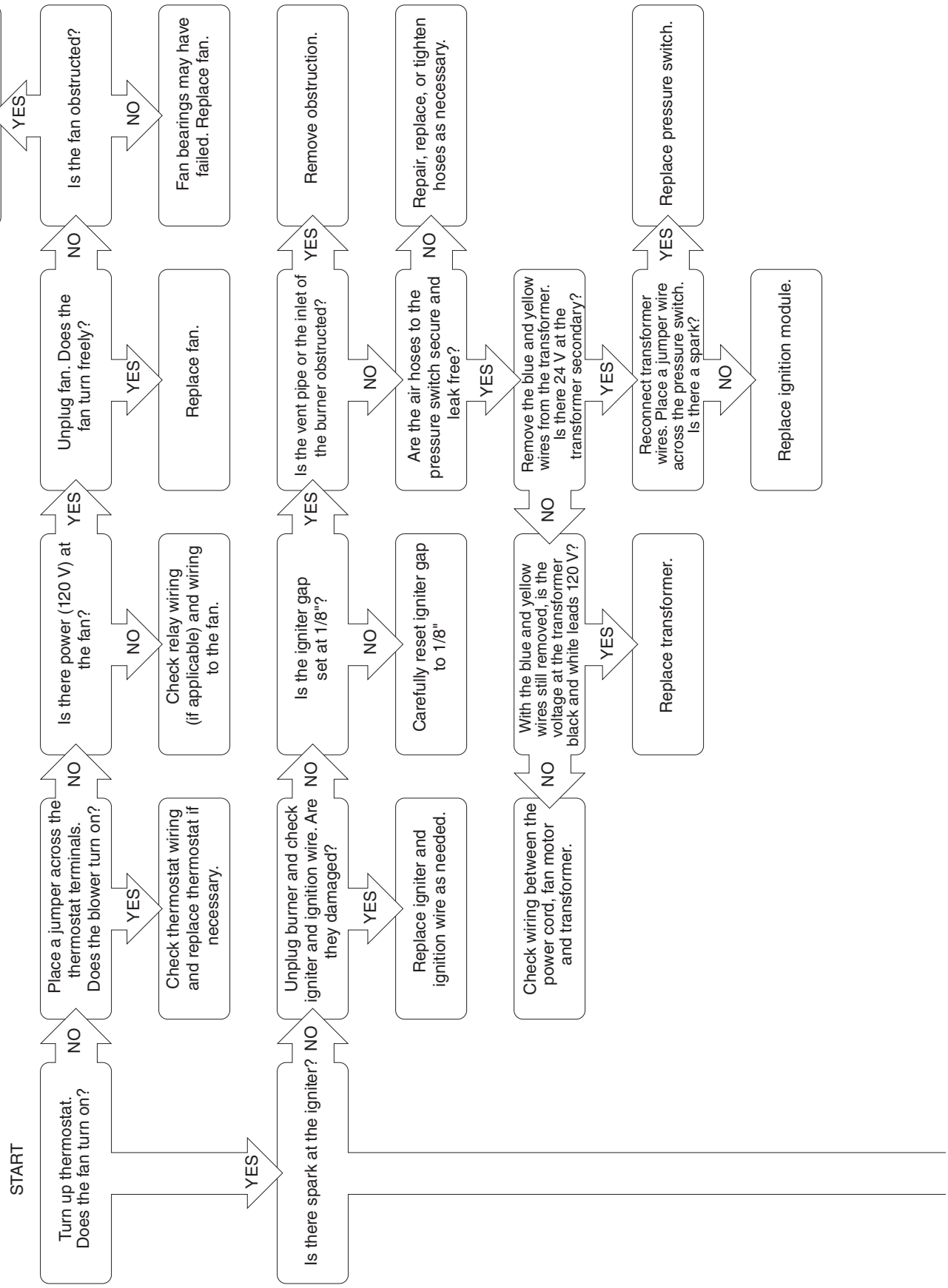
SECTION 18: TROUBLESHOOTING

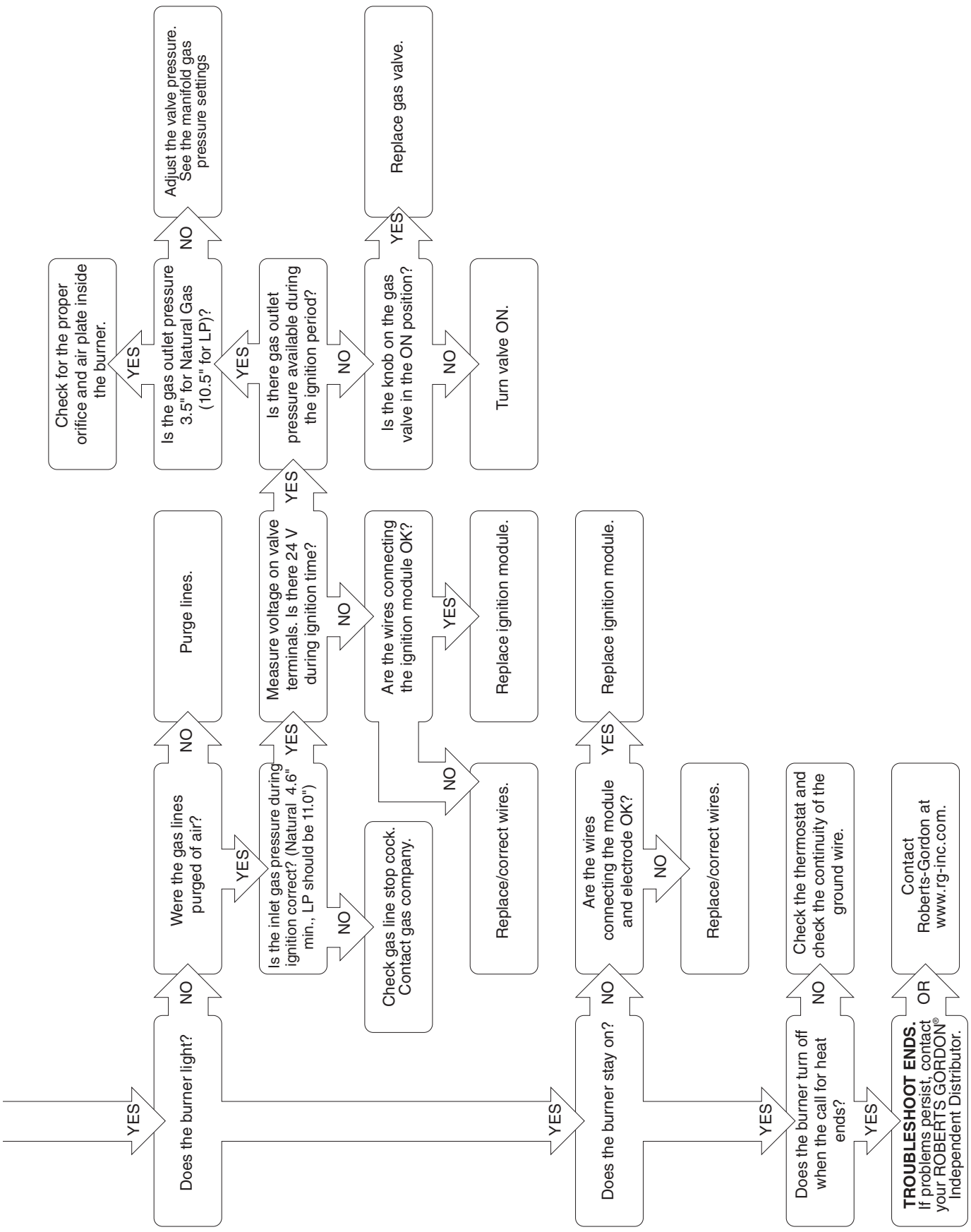
18.1 Troubleshooting Flow Chart - Unitary


Turn up thermostat. Does the pump turn on?
Is there power (120V) to the control panel H and N terminals?
Check circuit breaker and/or fuse on panel supply circuit.
Test thermostat by placing a jumper wire between COM and appropriate thermostat T(1,2,3,4) terminal. Does the pump turn on?
Check thermostat wiring and replace thermostat if necessary.
Is there power (120V) between the panel MH and MN terminals?
Is the fuse on the circuit board blown?
Replace fuse. (P/N 90438200) 250V 3A size 3AG
Is there at least 12V DC at the pump relay coil? (M2 and W1 on circuit board.)
Replace main control board. (P/N 90437500)
Is the motor hot?
Is the pump impeller obstructed?
Remove obstruction.
Disconnect power to the motor. Does the motor turn freely?
Motor bearings may have failed. Replace motor.
Replace pump relay. (P/N 90437900, Omron G4B-112T1-US, or equivalent)
Motor may have tripped overload switch. Wait 10-15 minutes for automatic reset.
Is the motor connected properly? Refer to the wiring diagrams on the motor and in the installation manual
After a 45 pre-purge period, does the burner light?
Is there power (120V) between control panel BH and BN terminals of the zone calling for heat.
Is there power (120V) at the burner receptacle?
Check wiring to the burner. Make sure the burner is plugged in.
Disconnect wires from MBR and MBR-COM. Is there at least 12V DC between the terminals?
Reconnect MBR and MBR-COM. Are the vacuum proving and/or motor end switches operating properly?
Replace main control board. (P/N 90437500)
Repair or Replace switches as necessary.
Is there proper gas pressure and flow to the burners?
Correct gas problem. See Gas Piping Section for details.
Replace appropriate zone relay on main board. (P/N 90438100, Omron G2R-1-S, or equivalent)
Is blower side door in place?
Replace Door.
Remove door. Is voltage at door switch 120V? Check voltage between door switch and burner neutral (white).
Check wiring and Diagram.
Depress switch. Check voltage. Is it 120V? Check voltage between door switch and burner neutral (white).
Replace Switch
Is the vent pipe or the inlet of the burner obstructed?
Remove obstruction.
Is the igniter gap set at 1/8"?
Carefully reset spark gap to 1/8".
Unplug burner and check igniter and ignition wire. Are they damaged?
Replace igniter and ignition wire as needed.
Is there spark at the igniter?
Are the air hoses to the pressure switch secure and leak free?
Repair, replace or tighten hoses as necessary.
Check vacuum differential reading. Is it okay?
Reset dampers
Remove the blue and yellow wires from the transformer. Is there 24V at the transformer secondary?
With the blue and yellow wires still removed, is the voltage at the transformer black and white leads 120V?
Check wiring between the power cord and transformer.
Reconnect transformer wires. Place a jumper wire across the pressure switch. Is there a spark?
Replace transformer. (P/N 90436900)
Replace pressure switch. (P/N 90436701)
Yes
No

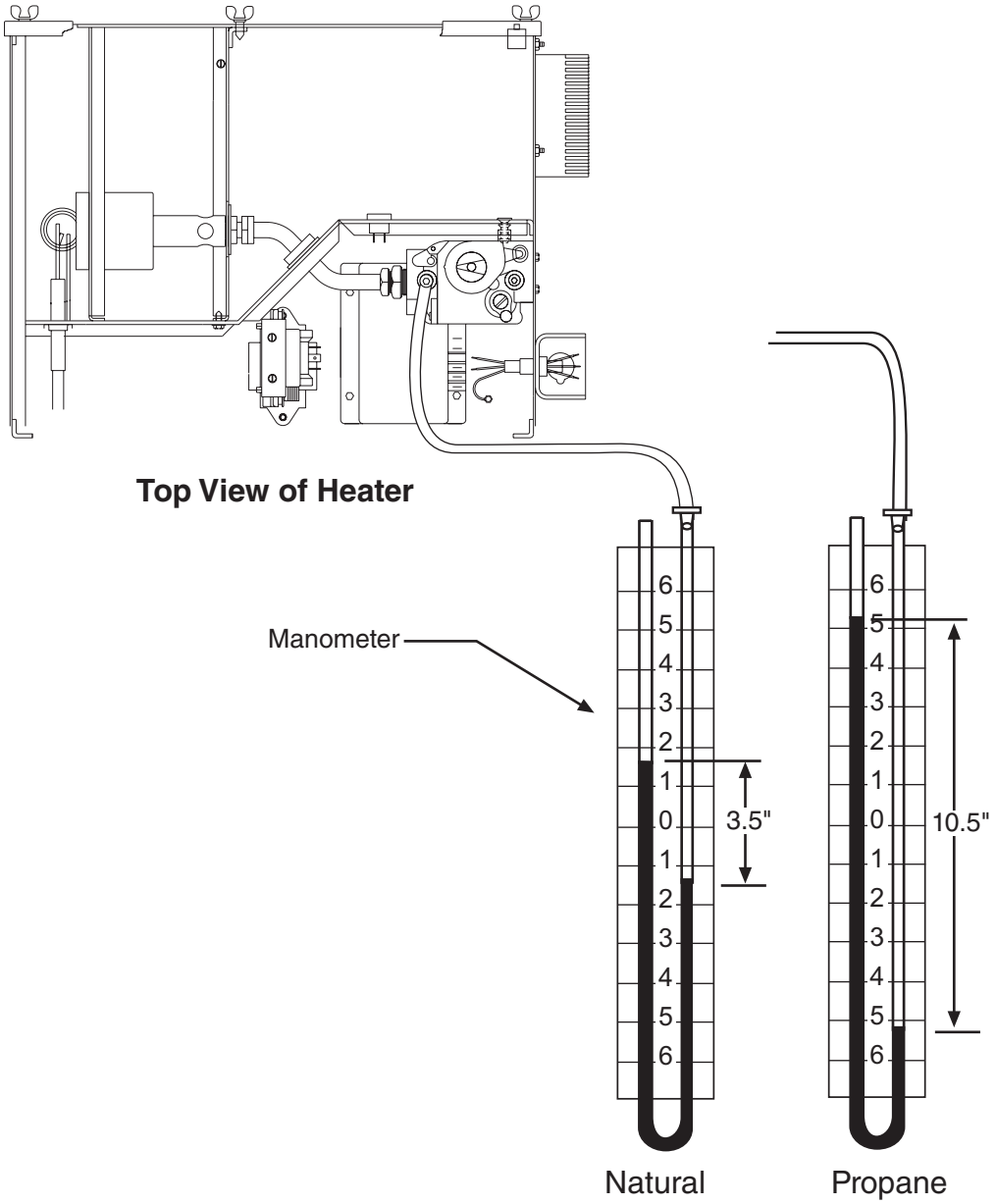

Does the burner stay on ?
No
Yes
Is the continuity of the earth wire established?
No
Re-Establish Continuity.
Yes
Is the insulation on the igniter/sensor leads OK?
No
Re-Establish Continuity.
Yes
Ignition module may have failed. Replace module. (P/N 90434002K)
Do all the burners ignite smoothly?
No
Is the vacuum setting to high?
Yes
Adjust system for proper vacuum. See venting section for details.
Yes
Do burners shut off after the call for heat is satisfied?
No
Make sure that all thermostats (including SmartSet and Night Set Back) are established.
Yes
With the thermostats connected, measure the voltage between the thermostat terminals (T1, T2, T3, T4, SCT and NST) and the COM terminal. Are all the voltages 5V.
No
Check thermostat wiring for shorts and replace thermostat if necessary.
Yes
Replace main control board. (P/N 90437500)
Yes
Does the pump shut down after a 45 second post-purge period?
No
Make sure that all thermostats (including SmartSet and Night Set Back) are satisfied.
Yes
Disconnect all thermostat wires. Disconnect W1 wire from COM. Does the pump continue to run after a 45 sec. post-purge period?
No
Reconnect thermostat wires. Disconnect W1 wire from pump relay. Does the pump still run?
Yes
Replace pump relay. (P/N 90437900, Omron G4B-1121-US, or equivalent)
No
Replace main control board. (P/N 90437500)
Yes
Troubleshoot ends. If problem persists, contact your local ROBERTS-GORDON® Representative.
No
Contact Roberts-Gordon at www.rg-inc.com
Yes
Replace door. Does the burner light?
No
Were the gas lines purged of air?
No
Purge Lines.
Yes
Is the inlet gas pressure during ignition correct? (Natural 4.6" min, 5.0 for EV-175, -200, LP should be 11.0" min)
No
Check gas line stop cock. Contact gas company.
Yes
Measure voltage on valve terminals. Is there 24V during ignition period?
No
Are the wires connecting the ignition module OK?
No
Replace/Correct wires.
Yes
Replace ignition module. (P/N 90434002K)
Yes
Is there gas outlet pressure available during the ignition period?
No
Is the knob on the gas valve in the on position.
No
Turn valve on.
Yes
Replace gas valve. (Natural P/N 90032500) (LP P/N 90032502)
Yes
Is the gas outlet pressure 3.5" for Natural Gas (10.5" for LP)?
No
Adjust the valve pressure.
Yes
Check for the proper orifice and air plate inside the burner.
Yes
Replace ignition module. (P/N 90434002K)
Yes

18.2 Troubleshooting Flow Chart - Multiburner


START
Turn up thermostat. Does the fan turn on?
NO
Place a jumper across the thermostat terminals. Does the blower turn on?
NO
Is there power (120 V) at the fan?
NO
Check relay wiring (if applicable) and wiring to the fan.
YES
Replace fan.
YES
Unplug fan. Does the fan turn freely?
NO
Is the fan obstructed?
NO
Fan bearings may have failed. Replace fan.
YES
Remove obstruction.
YES
Check thermostat wiring and replace thermostat if necessary.
YES
Is there spark at the igniter?
NO
Unplug burner and check igniter and ignition wire. Are they damaged?
NO
Is the igniter gap set at 1/8"?
NO
Carefully reset igniter gap to 1/8"
YES
Replace igniter and ignition wire as needed.
YES
Is the vent pipe or the inlet of the burner obstructed?
YES
Remove obstruction.
NO
Are the air hoses to the pressure switch secure and leak free?
NO
Repair, replace, or tighten hoses as necessary.
YES
Check wiring between the power cord, fan motor and transformer.
NO
With the blue and yellow wires still removed, is the voltage at the transformer black and white leads 120 V?
NO
Remove the blue and yellow wires from the transformer. Is there 24 V at the transformer secondary?
YES
Replace transformer.
YES
Reconnect transformer wires. Place a jumper wire across the pressure switch. Is there a spark?
YES
Replace pressure switch.
NO
Replace ignition module.

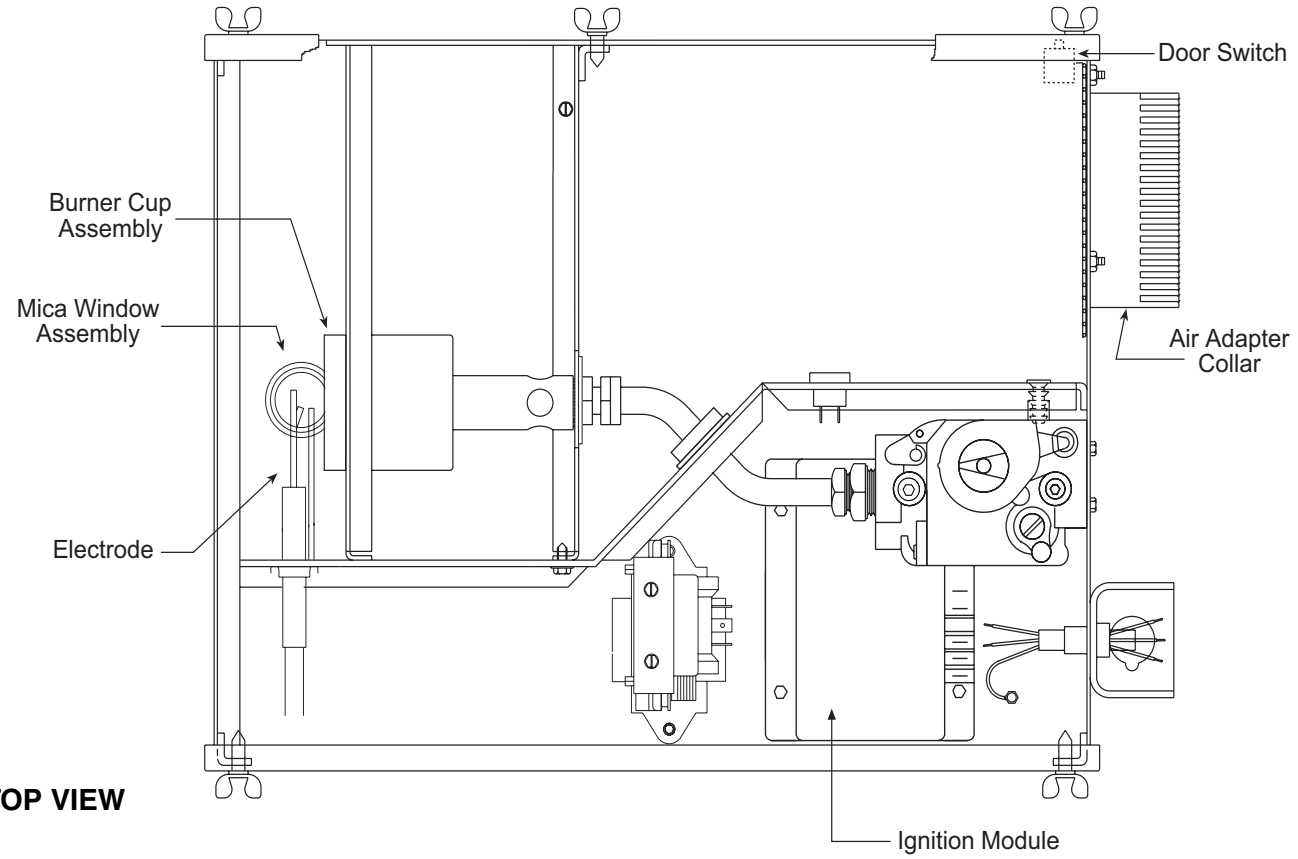

YES
Does the burner light?
NO
Were the gas lines purged of air?
NO
Purge lines.
YES
Is the inlet gas pressure during ignition correct? (Natural 4.6" min., LP should be 11.0")
NO
Check gas line stop cock. Contact gas company.
YES
Measure voltage on valve terminals. Is there 24 V during ignition time?
NO
Are the wires connecting the ignition module OK?
NO
Replace/correct wires.
YES
Replace ignition module.
YES
Is there gas outlet pressure available during the ignition period?
NO
Is the knob on the gas valve in the ON position?
NO
Turn valve ON.
YES
Replace gas valve.
YES
Is the gas outlet pressure 3.5" for Natural Gas (10.5" for LP)?
NO
Adjust the valve pressure. See the manifold gas pressure settings
YES
Check for the proper orifice and air plate inside the burner.
YES
Does the burner stay on?
NO
Are the wires connecting the module and electrode OK?
NO
Replace/correct wires.
YES
Replace ignition module.
YES
Does the burner turn off when the call for heat ends?
NO
Check the thermostat and check the continuity of the ground wire.
YES
TROUBLESHOOT ENDS.
If problems persist, contact your ROBERTS GORDON® Independent Distributor.
OR
Contact Roberts-Gordon at www.rg-inc.com.

18.3 Manifold Gas Pressure Setting

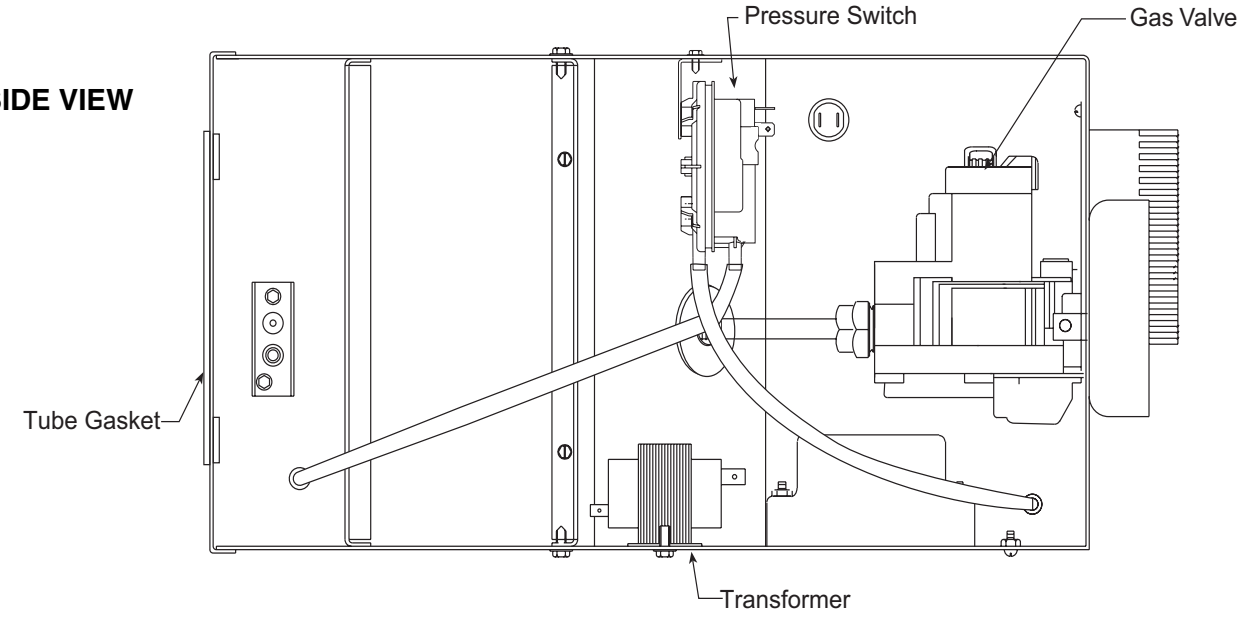


SECTION 19: REPLACEMENT PARTS LIST

Use only genuine ROBERTS GORDON® replacement parts.
Use of parts not specified by Roberts-Gordon voids warranty.
Failure to follow these instructions can result in property damage.



TOP VIEW



SIDE VIEW

Replacement Parts List (continued...)*

Description	Part Number
Burner	
Gas Valve (Natural)	90032500
Gas Valve (LP)	90032502
Burner Cup Assembly	03020100
Mica Window Assembly	02553203
Electrode	90427400
Electrode Gasket	02558501
Ignition Module	90439500K
Ignition Wire	90427706
Pressure Switch:	
(40, 80)	90439803K
(60, 100, 125, 150)	90439810K
(175,200)	90439802K
Transformer	90436900K
Door Switch	90436800
Air Adapter Collar	91911700
Tube Gasket	02568200
Outside Air Supply Blower	
Air Supply Blower/Power Venter	90707501

* For all other accessories, *see Page 11, Section 8.1*, *Page 26, Section 9.1*, *Page 12, Table 4* and *Page 27, Table 9*.

SECTION 20: GENERAL SPECIFICATIONS

20.1 Material Specification

20.1.1 Reflectors

.024 Aluminum
(Optional .024 Stainless Steel Type 304)

20.2 Heater Specifications

20.2.1 Control System

Fully automatic spark ignition with safety shut-off.

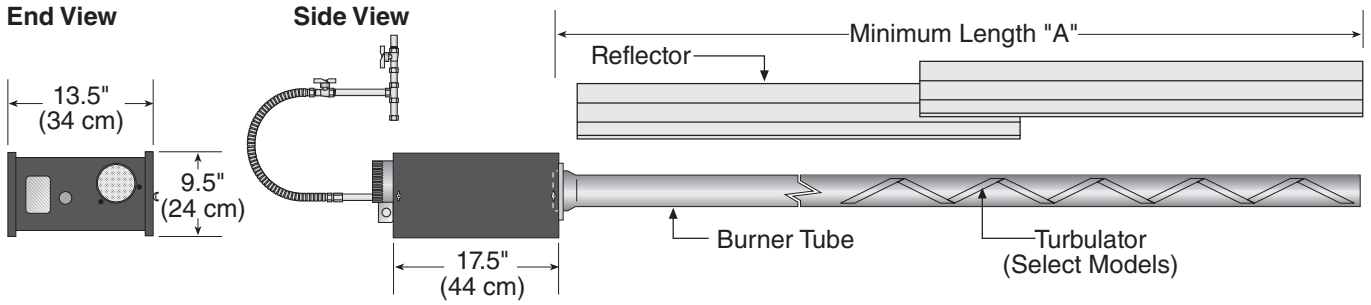
20.3 Suspension Specifications

Hang heater with materials with a minimum working load of 75 lbs (33 kg). *See Page 10, Figure 12*.

20.4 Controls Specifications

Time switches, thermostats, etc. can be wired into the electrical supply. External controls supplied as an optional extra.

General Specifications for the heaters are as follows:



Model	Heat Input Rate (Btu/h) x (1000)	Length "A" Minimum		Recommended Minimum Mounting Height*	
		Unitary	Multiburner	Space	Spot
CTHN-40	40	10' (3 m)	20' (6 m)	8'-10' (2.4 - 3 m)	8' (2.3 m)
CTHN-60	60	20' (6 m)	30' (9 m)	10'-12' (3 - 3.6 m)	9' (2.7 m)
CTHN-80	90	20' (6 m)	30' (9 m)	12'-15' (3.6 - 4.5 m)	11' (3.3 m)
CTHN-100	100	30' (9 m)	40' (12 m)	12'-15' (3.6 - 4.5 m)	12' (3.7 m)
CTHN-125	125	40' (12 m)	50' (15 m)	15'-20' (4.5 - 6 m)	15' (3.7 m)
CTHN-150	150	40' (12 m)	50' (15 m)	20'-25' (6 - 7.6 m)	20' (4.6 m)
CTHN-175	175	50' (15 m)	60' (18 m)	25' (7.6 m)	23' (6 m)
CTHN-200	200	50' (15 m)	60' (18 m)	25' (7.6 m)	25' (7.6 m)

**See Page 3, Section 3* for clearances to combustibles.

GAS PRESSURE AT MANIFOLD:

Natural Gas: 3.5" wc
LP Gas: 10.5" wc

PIPE CONNECTION:

1/2" NPT (for CTHN-40, 60, 80, 100, 125)
3/4" NPT (for CTHN-150,175 & 200)

DIMENSIONS:

Vent Connection Size: 4" (10 cm)
Outside Air Connection Size: 4" (10 cm)
Refer to figure above for dimensional information.

GAS INLET PRESSURE:

Natural Gas:

for CTHN-40, 60, 80, 100, 125, 150: 4.6" wc Minimum
for CTHN-175, 200: 5.0" wc Minimum
14.0" wc Maximum

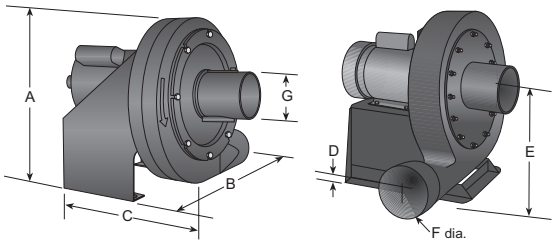
LP Gas: All Models: 11.0" wc Minimum
14.0" wc Maximum

ELECTRICAL RATING:

Unitary Models 40-150: 120 V - 60 Hz, 1 A
Unitary Models 175-200: 120 V - 60 Hz, 2 A
Multiburner All Models: 120 V - 60 Hz, 0.1 A

General Specifications for fans and pumps are as follows:

Pump Dimensional Data (in.)							
Model	**A**	**B**	**C**	**D**	**E**	**F**	**G**
EP-100	17	14.5	21	3.75	10	4	4
EP-201/203	17.75	17	20.25	3.25	10	4.5	4.5
EP-301/303	25.6	24.8	22.7	4.8	15.2	6	6



Fan and Pump Specifications

Model	05220000	05221000	EP-100	EP-201	EP-203	EP-301	EP-303
Horsepower (Hp)	.134	.23	1/3	3/4	3/4	2*	2*
Phase (Ø)	1	1	1	1	3	1	3
Hertz (Hz)	60	60	60	60	60	60	60
Voltage (V)	115	115	115/230	115/230	208-230/ 460	208-230	208-230/ 460
Full Load Amp (Amps)	.9	1.6	4.8/2.4	6.6/3.3	2.4-2.2/1.1	12.8-11.5	5.5-5.2/2.6
R.P.M.	3200	3200	3450	3450	3500	3450	3450
Motor Frame	-	-	56	56	56	90	90
Motor Enclosure	-	-	TENV	TENV	TEFC	TEFC	TEFC
Noise Level @ 5' (DBA)	-	-	-	70	70	-	-
Inlet/Outlet (In.)	4/4	4/4	4/4	4/4	4/4	6/6	6/6
Weight (lbs.)	10	12	62	112	112	170	170

** For starter, see National Electric Code (NEC) requirement for motors 1 hp or higher.*

Air Supply Blower Specifications	
Capacity	240 CFM @ 0.75 in wc
Power (W)	167
Phase	1
Hertz (Hz)	60
Voltage (V)	120
Full Load Amp (Amps)	1.5
R.P.M.	3000
Motor Enclosure	OPEN FC
Inlet/Outlet (In.)	5/5
Weight (lbs.)	10

SECTION 21: THE ROBERTS GORDON® VANTAGE® NP LIMITED WARRANTY

ROBERTS-GORDON WILL PAY FOR:

Within 42 months from date of shipment from Roberts-Gordon, replacement parts will be provided free of charge for any part of the product which fails due to a manufacturing or material defect.

Roberts-Gordon will require the part in question to be returned to the factory. Roberts-Gordon will, at its sole discretion, repair or replace after determining the nature of the defect and disposition of part in question.

ROBERTS GORDON® Replacement Parts are warranted for a period of 18 months from date of shipment from Roberts-Gordon or the remaining ROBERTS GORDON® VANTAGE® NP warranty.

ROBERTS-GORDON WILL NOT PAY FOR:

Service trips, service calls and labor charges.

Shipment of replacement parts.

Claims where the total price of the goods have not been paid.

Damage due to:

- Improper installation, operation or maintenance.
- Misuse, abuse, neglect, or modification of the ROBERTS GORDON® VANTAGE® NP in any way.
- Use of the ROBERTS GORDON® VANTAGE® NP for other than its intended purpose.
- Incorrect gas or electrical supply, accident, fire, floods, acts of God, war, terrorism, or other casualty.
- Improper service, use of replacement parts or accessories not specified by Roberts-Gordon.
- Failure to install or maintain the ROBERTS GORDON® VANTAGE® NP as directed in the Installation, Operation and Service manual.
- Relocation of the ROBERTS GORDON® VANTAGE® NP after initial installation
- The use of the ROBERTS GORDON® VANTAGE® NP in a corrosive atmosphere containing contaminants.
- The use of the ROBERTS GORDON® VANTAGE® NP in the vicinity of a combustible or explosive material.
- Any defect in the ROBERTS GORDON® VANTAGE® NP arising from a drawing, design, or specification supplied by or on behalf of the consumer.
- Damage incurred during shipment. Claim must be filed with carrier.

WARRANTY IS VOID IF:

The ROBERTS GORDON® VANTAGE® NP is not installed by an electrician qualified in the installation and service of control systems for heating equipment.

You cannot prove original purchase date and required annual maintenance history.

The data plate and/or serial number are removed, defaced, modified or altered in any way.

The ownership of the ROBERTS GORDON® VANTAGE® NP is moved or transferred. This warranty is nontransferable.

Roberts-Gordon is not permitted to inspect the damaged controller and/or component parts.

READ YOUR INSTALLATION, OPERATION AND SERVICE MANUAL.

If you have questions about your controller, contact your installing professional. Should you need Replacement Parts or have additional questions, call or write Roberts-Gordon:

U.S.A.
1250 William Street
P.O. Box 44
Buffalo, New York 14240-0044
716.852.4400
On the web at: www.rg-inc.com

Roberts-Gordon's liability, and your exclusive remedy, under this warranty or any implied warranty (including the implied warranties of merchantability and fitness for a particular purpose) is limited to providing replacement parts during the term of this warranty. Some jurisdictions do not allow limitations on how long an implied warranty lasts, so this limitation may not apply to you. There are no rights, warranties or conditions, expressed or implied, statutory or otherwise, other than those contained in this warranty.

Roberts-Gordon shall in no event be responsible for incidental or consequential damages or incur liability for damages in excess of the amount paid by you for the ROBERTS GORDON® VANTAGE® NP. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from jurisdiction to jurisdiction.

Roberts-Gordon shall not be responsible for failure to perform under the terms of this warranty if caused by circumstances out of its control, including but not limited to war, fire, flood, strike, government or court orders, acts of God, terrorism, unavailability of supplies, parts or power. No person is authorized to assume for Roberts-Gordon any other warranty, obligation or liability.

LIMITATIONS ON AUTHORITY OF REPRESENTATIVES:

No representative of Roberts-Gordon, other than an Executive Officer, has authority to change or extend these provisions. Changes or extensions shall be binding only if confirmed in writing by Roberts-Gordon's duly authorized Executive Officer.

ROBERTS GORDON
Infrared Heating

OWNER WARRANTY REGISTRATION CARD

Mail or Fax to:

Roberts Gordon, LLC •1250 William Street, P.O. Box 44 • Buffalo, NY 14240-0044 • Phone: 716-852-4400 • Fax: 716-852-0854
Toll Free: 800-828-7450 • www.rg-inc.com

About the Owner:

Name:_____

Address:_____ City: _____ State:_____ Zip Code:_____

Phone:_____ Fax: _____ E-mail:_____

About the Installer:

Name:_____

Address:_____ City: _____ State:_____ Zip Code:_____

Phone:_____ Fax: _____ E-mail:_____

Purchased From (if different than installer):

Name:_____

Address:_____ City: _____ State:_____ Zip Code:_____

Phone:_____ Fax: _____ E-mail:_____

About your Heater:

Model#:_____ Serial #:_____ Fuel: _____ Installation Date: _____

Type of Installation (check one):

o Automotive o Manufacturing o Warehouse o Recreational o Aircraft
o Public Building o Office o Retail o Agricultural o Other _____

Installation Code and Annual Inspections:
All installations and service of ROBERTS GORDON® products must be performed by a contractor qualified in the installation and service of products sold and supplied by Roberts-Gordon and conform to all requirements set forth in the ROBERTS GORDON® manuals and all applicable governmental authorities pertaining to the installation, service and operation of the equipment.

To help facilitate optimum performance and safety, Roberts-Gordon recommends that a qualified contractor annually inspect your ROBERTS GORDON® products and perform service where necessary, using only ROBERTS GORDON® replacement parts.

© 2006 Roberts-Gordon All rights reserved. No part of this work covered by the copyrights herein my be reproduced or copied in any form or by any means – graphic, electronic, or mechanical, including photcopying, recording, taping, or information storage and retrieval systems – without written permission of Roberts Gordon, LLC. Printed in the U.S.A.

Attach this information to a wall near the ROBERTS GORDON® heater.

ROBERTS GORDON®
Infrared Heating

Read the Installation, Operation, and Service Manual thoroughly before installation, operation, or service.

Know your model number and installed configuration.

Model number and installed configuration are found on the burner and in the Installation, Operation and Service Manual.

Write the largest clearance dimensions with permanent ink according to your model number and configuration in the open spaces below.

OPERATING INSTRUCTIONS

1. STOP! Read all safety instructions on this information sheet.
2. Open the manual gas valve in the heater supply line.
3. Turn on electric power to the heater.
4. Set the thermostat to desired setting.

TO TURN OFF THE HEATER

1. Set the thermostat to off or the lowest setting.

IF THE HEATER WILL NOT OPERATE, TO ENSURE YOUR SAFETY, FOLLOW THESE INSTRUCTIONS TO SHUT DOWN YOUR HEATER

1. Set the thermostat to off or the lowest setting.
2. Turn off electric power to the heater.
3. Turn off the manual gas valve in the heater supply line.
4. Call your registered installer/contractor qualified in the installation and service of gas-fired heating equipment.

⚠WARNING

Fire Hazard

Some objects can catch fire or explode when placed close to heater.

Keep all flammable objects, liquids and vapors the required clearances to combustibles away from heater.

Failure to follow these instructions can result in death, injury or property damage.

Maintain _____ clearance to the side and _____ clearance below the heater from vehicles and combustible materials.

Roberts-Gordon, LLC
1250 William Street
P.O. Box 44
Buffalo, NY 14240-0044 USA
Telephone: 716.852.4400
Fax: 716.852.0854
Toll Free: 800.828.7450

Roberts-Gordon Europe Limited
Oxford Street
Bilston, West Midlands WV14 7EG UK
Telephone: +44(0) 1902 494425
Fax: +44(0) 1902 403200

Service Telephone: +44(0) 1902 498733
Service Fax: +44(0) 1902 401464
E-mail: uksales@rg-inc.com
E-mail: export@rg-inc.com

Installation Code and Annual Inspections:
All installations and service of ROBERTS GORDON® products must be performed by a contractor qualified in the installation and service of products sold and supplied by Roberts-Gordon and conform to all requirements set forth in the ROBERTS GORDON® manuals and all applicable governmental authorities pertaining to the installation, service and operation of the equipment. To help facilitate optimum performance and safety, Roberts-Gordon recommends that a qualified contractor annually inspect your ROBERTS GORDON® products and perform service where necessary, using only ROBERTS GORDON® replacement parts.

© 2006 Roberts-Gordon, LLC All rights reserved. No part of this work covered by the copyrights herein may be reproduced or copied in any form or by any means – graphic, electronic, or mechanical, including photocopying, recording, taping, or information storage and retrieval systems – without written permission of Roberts-Gordon, LLC.

www.rg-inc.com Printed in U.S.A. P/N 91037912 Rev. C